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HUMAN CAPITAL, MENTAL HEALTH, SUBSTANCE USE AND SOCIAL SUPPORT AMONG LOW-INCOME WOMEN

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HUMAN CAPITAL, MENTAL HEALTH, SUBSTANCE USE AND SOCIAL SUPPORT AMONG LOW-INCOME WOMEN

DISSERTATION

A dissertation submitted in partial fulfillment of the
requirements for the degree of Doctor of Philosophy in the
College of Social Work
at the University of Kentucky

By
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ABSTRACT OF DISSERTATION

HUMAN CAPITAL, MENTAL HEALTH, SUBSTANCE USE AND SOCIAL SUPPORT AMONG LOW-INCOME WOMEN

Low-income women, including women who receive welfare, are some of the most misunderstood citizens in the U.S. Low-income women often live in extreme situations that are complicated by poverty and multiple issues related to human capital, social support, mental health, and substance use. These factors make low-income women unique in that they contribute not only to the women's current situations, but to their potential for future self-sufficiency. The majority of previous studies have described these factors as barriers to self-sufficiency. This study explored these factors differently by examining the extent to which human capital is associated with mental health problems and substance use problems and whether those associations are moderated by social support among low-income women. By exploring human capital among low-income women, this study closes a gap in the literature. Previous literature has examined human capital as an outcome of life choices and circumstances. This study is unique in that human capital is conceptualized as a combination of strengths that are employed in unique ways and that help determine whether life outcomes among low-income women will be related.

This study examined secondary data collected from 11,495 low-income women who participated in the University of Kentucky's Targeted Assessment Program (TAP) between July 2005 and July 2011 and is informed by theoretical literature on human capital, social support, and relationships, as well as empirical literature on study factors related to problems experienced by low-income women (i.e., mental health problems, substance use problems, and social support). Study hypotheses were developed to examine the relationships between human capital and mental health and substance use among low-income women and whether social support moderates those relationships. Results indicate that while some human capital factors are indicative of fewer mental health and substance use problems, perceived social support was a significant indicator of each of the mental health and substance use factors. Perceived social support was not found to moderate relationships between predictor and outcome variables.

KEYWORDS: Low-Income Women, Human Capital, Social Support, Mental Health, Substance Use

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December 5. 2012

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This is dedicated to my parents, Carl and Sally, who are my inspiration.

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Chapter 1: Introduction & Theory

Rationale for the Study

Low income women, including women who receive welfare, are some of the most misunderstood citizens in the U.S. In 1976, soon-to-be president Ronald Reagan began referring to welfare recipients as "Welfare Queens" who drive Cadillacs and fraudulently collect thousands of dollars in benefits under dozens of aliases, bilking hard-working taxpayers out of their money (The New York Times, 1976). The public has, by and large, subscribed to this characterization of low-income women and has approved of the government's reduction of safety net benefits over the last 25 years (Epstein, 2004). Many in the U.S. are threatened by low-income women and women who use welfare to support their families because they believe that these women are to blame for "the moral decay of society" (Ozawa & Kirk, 1996, p. 194). In reality, low-income women are a vulnerable population with multiple problems. Low-income women often live in extreme situations that are complicated by poverty and multiple issues related to human capital, social support, mental health, and substance use. These problems make low-income women unique in that they contribute not only to the women's current situations, but to their potential for future self-sufficiency.

Low-income women suffer not only from being mischaracterized by society, but from multiple problems that can have debilitating effects. Many of those problems have been widely studied and include low human capital (Dworsky & Courtney, 2007; Jacobs & Winslow, 2003; Taylor & Barush, 2004); mental health problems (Danziger, Kalil & Anderson, 2000; Dworsky & Courtney, 2007; Lichter & Jayacody, 2002; Stromwall, 2001; Taylor & Barush, 2004); substance use problems (Alfred & Martin, 2007; Gutman,

McKay, Ketterlinus, & McLellan, 2003; Montoya, Atkinson, & Struse, 2001), and low levels of perceived social support (Ennis, Hobfoll, & Schröder, 2000; Jackson, 1999; Simmons, Braun, Wright, & Miller, 2007). The majority of studies have described these factors as barriers to self-sufficiency. This study explores these factors differently by examining the extent to which human capital is associated with mental health problems and substance use problems and whether those associations are moderated by perceived social support among low-income women. By exploring human capital among low-income women, this study closes a gap in the literature. Previous literature has examined human capital as an outcome of life choices and circumstances. This study is unique in that human capital is conceptualized as a combination of strengths that are employed in unique ways and that help determine whether and how life outcomes among low-income women will be related.

Purpose of the Study

In general, the literature has shown that both human capital and social support are instrumental in helping women have more positive life outcomes. The purpose of this study is to examine the extent to which human capital is associated with mental health problems and substance use problems and whether those associations are moderated by social support among a targeted, vulnerable sample of low-income women. Specifically, the purpose of this study is to examine the following research questions: 1) Is human capital associated with mental health problems and substance use problems experienced by low-income women?; 2) How are individual human capital factors (i.e., education, income, and employment) associated with mental health problems and substance use problems among low-income women?; 3) Does social support moderate the relationships

between human capital, mental health, and substance use problems among low-income women?

Multiple linear regression analyses and correlations were used to examine the extent to which human capital is associated with mental health problems and substance use problems and is moderated by social support. Specifically, the independent variable human capital (measured by years of school completed, current education, current employment, current volunteer work without pay, and length time spent at one job) will be regressed on the dependent variables mental health problems (measured using DSM IV diagnostic criteria for depression and anxiety) and substance use (measured using DSM IV diagnostic criteria for substance abuse and substance dependence) while controlling for age, marital status, number of children, welfare receipt status, and social security benefit receipt status. In addition, moderating effects of social support were examined in the linear regression analyses.

Unique Contribution of the Proposed Study

This study is unique in that it considers human capital as an indicator variable. In much of the previous research, human capital has been examined as an outcome variable; something that an individual acquires as the *result* of education, income, and employment. Another way of considering human capital is as a combination of factors (education, income, and employment) that are unique to each individual and help shape each individual's life outcomes. Human capital theory was first described in detail in the late 1950s and early 1960s by economists as a measure of worker productivity (Becker, 1962; Schultz, 1961). Economists continue to utilize human capital measures to compare worker productivity levels in countries across the globe (Heckman, 2000), yet this theory has not been applied to the social service literature to understand the unique strengths that

an individual might have which contribute to her increased chances for favorable outcomes. For this study, human capital factors (i.e., education and employment) are conceptualized as a combination of strengths that every person possesses.

Each individual possesses different types of human capital which allows her to make choices and have opportunities that are based on the type of human capital and her degree of human capital. For example, an individual with a bachelor's degree in laboratory technology has the knowledge and skills to prepare and grow bacterial cultures and investigate chromosomal differences across species. She is likely to earn a high income. On the other hand, an individual who works harvesting tobacco has a unique set of skills and knowledge that allows her to successfully pick tobacco. She is likely to earn a lower income. These two individuals have very different and unique sets of knowledge, skills, and education as well as different employment histories and incomes. The individual with the bachelor's degree makes more money, has more and broader employment prospects, and is likely to earn more over the course of her lifetime while the individual who harvests tobacco makes less money, has very few job prospects aside from working in tobacco fields, and is likely to earn less money during her lifetime. Both individuals have strengths, unique skills and knowledge, incomes, and employment histories; but individuals with higher levels of education, higher incomes, and who have a history of working regularly have greater degrees of human capital and are likely to have more positive overall life outcomes. Thus, if human capital is viewed as a continuum, the individual with the bachelor's degree has a greater degree of human capital than the individual who picks tobacco. Historically, economists have examined human capital by assessing an individual's productivity and concluding that individuals with greater outputs (i.e., those who make more money) are of greater worth to society. However,

among social scientists; the assessment of human capital is new. Because social workers are much more likely to encounter individuals with less human capital (i.e., the tobacco-picker), there are important questions that must be answered about how best to understand the relationship between their unique skills, their future potential for earnings and successes, and the problems they experience (i.e., mental health, substance use, and social support). If a greater understanding of these factors is achieved, it is likely that treatment and intervention strategies with low-income women can be enhanced alongside increased opportunities for human capital development. This is especially important for low-income women because they are often not mentioned in discussions about human capital. A unique contribution of the study is that it fills a gap in the literature by answering some of these preliminary questions with a social science perspective and that it seeks to bring low-income women into the conversation on human capital.

Another unique contribution of this study is that it examines the relationship between human capital and mental health problems and substance use problems among low-income women. The existing literature on the association between human capital and these important outcomes is very limited and this study seeks to fill the gap in the literature on this important and under-researched area.

For this study, human capital is conceptualized as a continuum with more education, higher income, and a history of work at one end of the continuum and less education, lower income, and a limited work history at the other end of the continuum. This study is also unique in that educational levels, income, and employment history are viewed as strengths rather than as limitations among low-income women. Generally, women with low-incomes are characterized by their lack of education, income, and employment – components usually necessary in human capital studies. This study seeks

to re-characterize low-income women as having strengths and to examine the extent to which these strengths are indicative of their life outcomes. Human capital theory supports this conceptualization and is described below.

Theoretical Basis for the Study

Human capital theory.

Human capital has been defined as an exclusive set of knowledge and skills that each individual accumulates and employs in unique ways (Gao, Gill, Schmidt, & Pratt, 2010) to increase earnings and promote positive opportunities and life outcomes (Becker, 1995; Mincer, 1989). Human capital theory is often viewed as being primarily used by economists for the purposes of studying the economics of education (Sweetland, 1996); however, human capital theory has emerged as a method used by the social work profession to understand human behavior. Human capital theory has a significant amount to contribute to our understanding of mental health problems and substance use problems because it takes into account that individuals employ the knowledge and experiences they have accrued in unique ways. For example, individuals with less human capital may feel marginalized and may, as a result, be more likely to become depressed or anxious and to use substances to cope with those negative feelings. On the other hand, individuals with more human capital may have a greater sense of self-worth and may, therefore, be less likely to experience depression or anxiety, and to self-medicate.

Early human capital idea.

Human capital theory has been developed and debated over the last 230 years, most notably by early scholars like John Stuart Mill, Adam Smith, and Irving Fisher. However, the formal field of human capital study was not established by economists until the late 1950s and early1960s. Later economist scholars who study human capital include

Theodore Schultz and Gary Becker, who both received Nobel prizes for their work in the area of human capital (Sweetland, 1996). It was not until the late 1950s and early 1960s that the idea of viewing people as capital emerged and took hold among economists (Schultz, 1961). In fact in early conceptualizations of wealth and capital, John Stewart Mill described his distaste for the idea of viewing men as capital (Schultz, 1961; Sweetland, 1996). Mill (1891) argued that the skills and talents that individuals have are inextricably rooted in their fundamental human nature and cannot, therefore, be considered as wealth by any reasonable person. Instead, he deemed these skills and talents as a means to an end. In other words, he viewed these abilities as a way for individuals to accrue wealth, and not as wealth in and of themselves (Mill, 1891). With these ideas, he helped set the stage for what would come to be known as human capital theory.

Adam Smith, a philosopher-economist also offered some early ideas on capital and wealth that contributed to the foundational thinking on human capital (Sweetland, 1996). He put forth the idea that all of the abilities of individuals in one nation can be combined and used to describe that nation's wealth (Smith, 1806). Today, economists base their comparisons of human capital capabilities between countries on this early idea (Sweetland, 1996). Smith (1806) was also the first to point out that while individuals incur expenses when they invest in education and job training, they will benefit from those investments by accruing personal capital and, consequently, earning higher wages. Along those same lines, Irving Fisher (1906) described people as capital. In fact, Fisher (1906) described people as serving the same function in the labor market as machines. Without people, the labor market could not exist. These early ideas laid the foundation for the resurgence of human capital thinking and later ideas on human capital theory.

Current human capital theory.

The later human capital economist-theorists adopted the early belief that education was instrumental in enabling individuals to increase their earnings (Schultz, 1961) and to that end, that people are in and of themselves a form of capital. This became the fundamental tenet of human capital theory. These later theorists saw that when people made investments in themselves with education, whether through job training, postsecondary education, or other methods, they made more money and were instruments of their own human capital accrual. Shultz (1961) noted as one of the fundamental truths of human capital theory that when individuals are able to, they make substantial investments in their own futures. "By investing in themselves, people can enlarge the range of choice available to them. It is one way free men can enhance their welfare" (Schultz, 1961, p. 2).

Since the 1960s, human capital theory has been largely described by economists as "a product of deliberate investment" with rapid growth rates "that…may well be the most distinctive feature of the economic system" (Schultz, 1961, p. 1). Economists are most interested in utilizing human capital theory at a much more macro level to understand how trends in nationwide economic development are related to individual gains (Becker, 1964; Schultz, 1961). From an economic standpoint, "human capital theory suggests that individuals and society derive economic benefits from investments in people" (Sweetland, 1996, p. 341). The theory holds that human capital is acquired in many different ways including high school education, adult basic education, vocational training, specialized skill training (i.e., certified nursing assistant), on-the-job training, and postsecondary education. The unique set of knowledge and skills that individuals

acquire by participating in various types of educational programs helps increase their earnings (Sweetland, 1996).

Another important tenet of human capital theory is that a person's family of origin influences the amount of income she is able to earn (Becker, 1995; Becker, 2002; Becker & Tomes, 1986; Borjas, 1995). Becker and Tomes (1986) describe the transmission of human capital from parents to children. They point out that parents usually provide their children with an inheritance of money; but they also pass on other things that enable their children to either have more positive life outcomes or more negative life outcomes. These outcomes depend on whether parents have made positive investments in themselves. If they have, state Becker and Tomes (1986), their children are likely to learn from their parents and make more positive investments in themselves. If parents have been able to ensure that their children have inherited greater amounts of money (via the parents' higher levels of human capital), children are likely to utilize some of that money to invest in things like education for themselves. Becker and Tomes note that another form of inheritance parents pass on to their children comes in the form of non-tangible characteristics such as motivation. Children with motivated parents are more likely to possess that same characteristic and to use it to further their own human capital which, in turn, increases their earning capability.

Due to the generational influence of human capital, it is important not only to examine human capital as an outcome of educational attainment, but as an indicator of protective human behaviors and characteristics. Since human capital theory helps economists predict that individuals with higher levels of education will earn more money and generally have better economic outcomes, it stands to reason that human capital can predict other positive outcomes that are related to being financially well-off.

Traditionally, low-income women have been left out of the conversation when it comes to describing which individuals have human capital. The literature generally describes low-income women as having a number of issues that contribute to their poverty and related challenges. This study seeks to challenge that assumption. Rather than viewing low-income women as lacking human capital and having few strengths, this study will examine human capital among low-income women by exploring selected factors in order to determine how those factors are related to their life outcomes. This approach is compatible with a social work perspective in which all individuals have strengths. Therefore, low-income women should not be defined solely by their education, employment history, and income but instead in a more individualized way. The social work profession sees people first as unique individuals with unique sets of skills. Those skills are examined specifically in this study as education and employment and are viewed as strengths. The strengths-based social work perspective is the foundation for this study's conceptualization of human capital as a continuum of strengths. This study is a unique test of human capital theory because it explores human capital's contribution as a continuum of factors related to well-being including social support, mental health, and substance use among low-income women.

Social support theory.

This study also explores the importance of perceived social support among low-income women. Research has indicated that women define themselves through the relationships they have with others (Finkelstein, 1996) and that when those relationships are mutually supportive, women are likely to experience more positive life outcomes (Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005). Social support has also been shown to reduce the severity of (moderate) women's reactions to life stressors (Cobb,

1976). Due to the unique qualities that social support has for women, this study examines perceived social support as a potential moderator of the relationships between human capital and mental health and substance use problems.

Foundational ideas about social support.

Social support ideas are rooted in John Bowlby's discussions of attachment theory (1969, 1973, 1980). According to Bowlby (1973), individuals develop attachments to others beginning in infancy and those attachments continue to develop throughout her lifetime. Bowlby contends that the way in which people are attached to others when they are very young, whether securely or insecurely, translates to how they form attachments later in life. Adults are able to maintain different levels of attachment in regard to multiple individuals, though the depth of those relationships may be related to their early levels of attachment (Bowlby, 1969). Bowlby (1969, 1973, p. 234) describes the importance of "attachment figures" and states that they are individuals who are "trusted companion[s]" and who have the distinction of being confidants and close friends. Attachment figures increase an individual's likelihood of feeling protected while mitigating the extent to which an individual experiences negative emotions including fear, distress, and anxiety (Bowlby, 1973). One of the most important facets of Bowlby's (1973) theory regarding attachment figures is "that, in reference to an attachment figure, presence is to be understood as implying ready accessibility rather than actual and immediate presence" (p. 234). Bowlby (1973) also points out that the more confident individuals are that their attachment figures are ready to come to their aid, the less likely they are to experience anxiety, distress, and fear. These ideas form the basic foundation of social support theory and indicate that the perception of the availability of social support has important implications, particularly for women.

Social support and women.

Historically, theories of development have been described from a male perspective about men. Past developmental theorists focused on the idea that disconnection was the most effective way for individuals to achieve self-sufficiency and independence; however work during the 1990s helped theorists describe more inclusive theories that define connections as extremely important for healthy development, particularly among women (Finkelstein, 1996). Self-relational theory highlights the unique features of connections and relationships among women. According to self-relational theory, women need "mutual, empathic, authentic relationships" in order to experience personal "emotional growth and change" and to live psychologically fulfilling lives (Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005, p. 228). Whereas older androcentric psychoanalytically-based theories identify detachment as a means to self-sufficiency and individualization, self-relational theory identifies "connections…as fundamental to psychological growth and healing" and as the "core of self-structure in women" (Finkelstein, 1996, p. 24). Without these attachments, a "disconnection" occurs and "often leads women to feelings of powerlessness, anxiety, low self-esteem, and depression" (Finkelstein, 1996, p. 26). Self-relational theory holds that empowering women to enter into mutually supportive relationships and fostering those supportive connections leads to more positive overall life outcomes (Finkelstein, 1996; Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005). In fact, self-relational theory has been utilized to assist in fostering connections and building social support among women in treatment programs (Camp & Finkelstein, 1997), parenting classes, (Bogage, Finkelstein, & Donald, 2003), and across multiple systems (Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005). This female-focused theory is very different from androcentric theories of

disengagement and highlights the unique importance of connections, support, and attachment for women.

Social support as a buffer for stress.

Shortly after Bowlby first described his theory of attachment, Sidney Cobb explained his stress-buffering theoretical approach regarding social support (Cohen, Gottleib, & Underwood, 2000). Cobb (1976) understood that individuals often experience major events and traumatic moments during their lifetimes. However, he also recognized that when individuals perceive that they have positive, supportive people in their milieu, they are better able to cope with those negative experiences. He stated that the more that individuals believe that they are "cared for and loved" and "esteemed and valued," the more likely they are to feel protected from the negative emotions and problems that are likely to occur as a result of major life events (Cobb, 1976).

Cobb's theory that social support offers a buffer from stress has been corroborated. Cohen and Wills (1985) conducted a meta-analysis of 19 studies on social support that were conducted between 1975 and 1983. They confirmed Cobb's assertion that when individuals perceive that social support is available to them, they are more able to cope with negative life stressors. Importantly, they also confirmed that the perception of available support is more significant than the actual support received. This finding affirms Bowlby's assertion that perceived support has a greater impact on individuals' well-being than the actual support that is received. Thus, the key to stress-buffering social support theory is that "whether or not one actually receives support is less important for [mental] health and adjustment than one's beliefs about its availability" (Cohen, Gottleib, & Underwood, 2000, p. 7).

Social support is a stress-buffer which implies that it has the ability to function as a moderator between stressful life situations and outcomes. Specifically, Cobb (1976) explicitly describes this phenomenon: "social support facilitates coping with crisis and adaptation to change. Therefore, one should not expect dramatic main effects from social support. The theory says that it is in moderating the effects of the major transitions in life and of the unexpected crises that the effects should be found" (p. 302). Cobb (1976) also describes the protective nature of social support in that "adequate social support can protect people in crisis from a wide variety of pathological states [including]…depression, alcoholism, and other psychiatric illness" (p. 310). His final recommendation is that social workers in particular should "start now to teach all [of their] patients, both well and sick, how to give and receive social support" (p. 312).

Summary of theoretical approaches.

This study utilizes human capital theory and the stress-buffering theory of social support to examine the extent to which human capital factors reduce mental health problems and substance use problems among low-income women, and whether these relationships are moderated by social support.

The human capital theory approach utilized in this study describes how individuals have been viewed as capital throughout history (Mill, 1891; Smith 1806) and, more recently, how individuals accumulate capital and pass it on to subsequent generations (Becker, 1964; Becker & Tomes, 1986; Schultz, 1961). This theoretical component is important for this study. Human capital theory holds that the more human capital individuals acquire, the more likely they are to have more positive life outcomes that they will pass on to future generations. For low-income women, this has encouraging implications and has been ignored in previous research on human capital, and more

recently in the application of human capital theory to social service populations. If low-income women are able to acquire more human capital (e.g. through education), their children may also be more likely to do so and future generations will continue the upward trend in human capital acquisition. A potential outcome of this trend is that future generations may be more self-sufficient and less dependent upon social welfare programs.

The historical development of human capital theory supports the conceptualization of human capital for this study. For this study, human capital is conceptualized as a continuum with more education, income, and employment at one end and less education, income, and employment on the other end. When viewed through the lens of the strengths-based focus of the social work profession as a continuum and as a set of strengths, human capital becomes more individualized, which is very different from the less individualized more macro-focus of economists who study human capital. By defining individuals as their skills (i.e., education, employment, and income) economists miss the human element that comes with a social work perspective. The social work profession takes human capital one step further than economists do. Social work has an action plan for assisting individuals with accruing additional human capital should they be interested in doing so after their analyses, while economists end with their analyses. Instead of defining individuals by their skills, this study views people as unique individuals while recognizing that their skills (i.e., education, employment, and income) are their strengths.

Social support theory is also utilized in this study. The stress-buffering theory of social support maintains that the perception of the availability of social support is a primary key to the protective and moderating properties of social support (Bowlby, 1969,

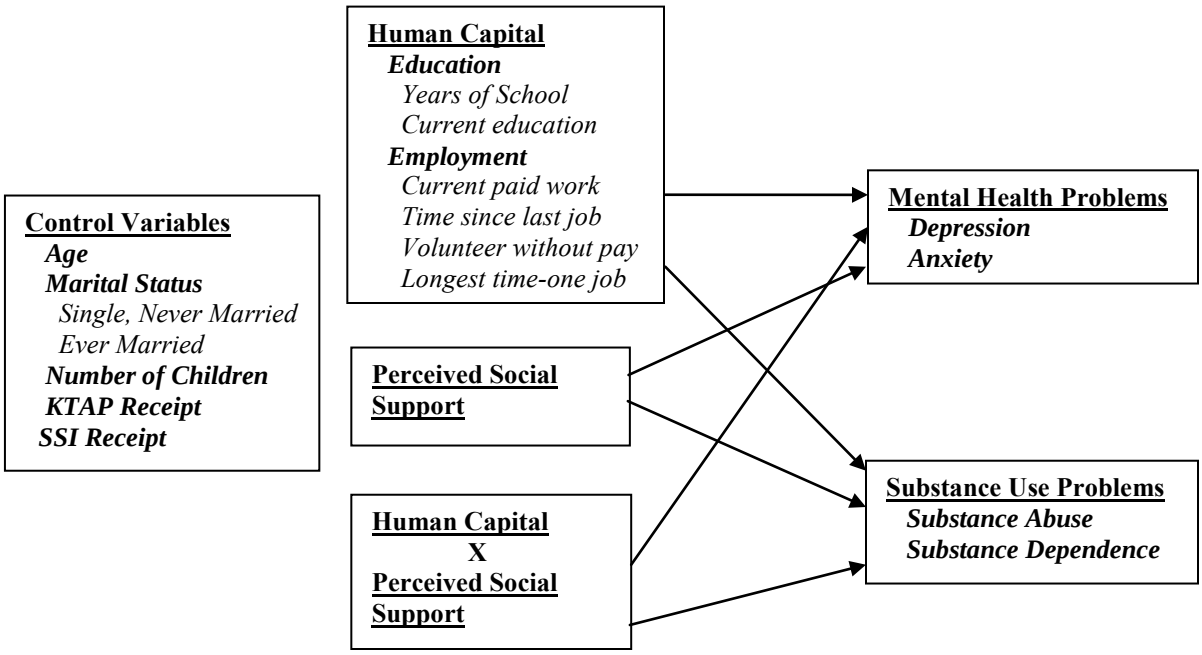
1973; Cobb, 1976). As this study's moderator, perceived social support was examined to determine whether those properties hold true among a sample of low-income women with varying degrees of human capital.

The proposed study fills a gap in the literature. Most studies have examined human capital as an outcome variable. Human capital is generally conceptualized as a dependent measure – such as the result of attaining education, income, and employment. However, this study is unique in that it examines human capital as an indicator variable. In this study, human capital is conceptualized as a combination of factors (education and employment) that are unique to each individual and play a role in each individual's life outcomes. This approach is in keeping with the social work perspective that each individual has her own set of strengths that she utilizes to meet life's challenges. In light of this identified gap in the literature, a better understanding of how human capital functions as an indicator of life outcomes among low-income women is warranted.

Conceptual Model

This study attempts to gain a better understanding of low-income women's overall human capital and whether more human capital mitigates common problems (i.e., mental health problems and substance use problems) experienced by low-income women. This study also explores whether perceived social support moderates the relationship between human capital and mental health problems and substance use problems among low-income women. See Figure 1 for the conceptual model for the current study.

Figure 1. Conceptual model



This model organizes the key variables that will be examined in the current study. This model is examined as a framework for better understanding the complex relationships that have been identified in the literature. Presented on the left side of the model are the control variables, independent variables and the moderating variable. The dependent variables are presented on the right side of the model. Direct relationships between these variables will be explored using correlational and OLS regression models. Based on human capital theory and the stress-buffering theory of social support, it is expected that more human capital will increase the likelihood of less mental health problems and substance use problems among low-income women and that perceived social support will moderate those relationships. A review of the literature supports these hypotheses and is presented in the following chapter.

Chapter 2: Review of the Literature

Chapter two provides an overview of selected literature on human capital and social support among low-income women. It is expected that this study will find that greater human capital among low-income women will influence their degree of mental health problems (i.e., depression and anxiety) and drug use (i.e., dependence and abuse). Specifically, increased human capital (i.e., education, employment, and income) is expected to be indicative of decreased depression, anxiety, and drug use. In addition, this literature review includes studies on depression, anxiety, and substance use as they relate to social support, which is the potential moderating variable of the proposed study. It is expected that social support will moderate the relationships between human capital, mental health problems, and substance use problems among low-income women. Definitions of human capital and social support are presented and an overview of selected literature is provided.

Human Capital

Human capital has mainly been examined by economists to study the impact of education, income, and employment on society as a whole. More recently, however, social scientists have become interested in how human capital affects individuals throughout their lifetimes. Human capital theory helps us understand how well- or ill-equipped individuals are to meet life's challenges. Human capital encompasses factors such as education, skills, and knowledge that influence how much actual capital (i.e., earnings) a person is capable of producing. In this regard, human capital is often understood as a collection of intangibles a person acquires during and after completion of endeavors such as post-secondary education, job skills training, vocational training, or trade apprenticeships, that is then used to begin or further employment (Gao, Gill,

Schmidt, & Pratt, 2010). A body of research has examined how human capital acquisition increases fiscal opportunities and lays the groundwork for better personal and familial outcomes for people living in poverty which is covered in this section.

Human capital has been defined as a compilation of skills and knowledge that a person accrues throughout her lifetime and uses to improve her earning potential (Gao, Gill, Schmidt, & Pratt, 2010). According to Gao, Gill, Schmidt, and Pratt (2010), economists have been touting the importance of accumulating human capital through school attendance and have pointed out that learning skills and information in school will become an even more important method for accumulating human capital as time goes on and competition for jobs becomes even more fierce. Further illustrating the importance of human capital, Gao, Gill, Schmidt, and Pratt (2010) point out that throughout history the U. S. government has instituted numerous educational and job training programs to benefit low-income, poverty-stricken individuals. These programs carry out the tenets of human capital theory. One example of a set of human capital-promoting policies is found in The War on Poverty which was instituted in 1964 under the Johnson administration (Brauer, 1982). The War on Poverty was a grand effort by the federal government to create and carry out programs that were meant to assist individuals with the acquisition of human capital.

One important piece of legislation created under the auspices of the War on Poverty was the Economic Opportunity Act (EOA) of 1965. The EOA was instituted amidst a downward trend in the U.S. which manifested in increasing earnings inequality among U.S. workers (Popple & Leighninger, 2011). EOA policy focused on anti-poverty measures and sought to, among other things; provide job training and career development services for low-income individuals with low human capital. Many of these anti-poverty,

human capital acquisition measures remain in place today, almost half a century later and yet; at times it seems that, in the words of Ronald Reagan (1988) in his final State of the Union speech, "poverty won." During his speech Reagan assailed his predecessors for creating "a massive social problem" by maintaining the U.S.'s safety net in the form of social welfare programs.

While Reagan called for a retrenchment of social welfare programs, economists were pointing to the "intimate and transparent relation between investments in human capital and the alleviation of poverty" (Becker, 1995, p. 1). The economist Gary Becker (1995), who is one of the foremost economist-researchers in the area of human capital, has called the twentieth century "the Age of Human Capital" because countries have come to be judged by the world market on the degree of education, knowledge, and skills their citizens have and utilize. Becker (1995) also points out that human capital makes up eighty percent of the capital in wealthy nations like the U. S. and that neglecting human capital accrual methods such as education and job training maintains high rates of poverty, less healthy people, and shorter life-spans. In fact, he maintains that "education may be the most important single personal determinant of a person's health and life expectancy" (Becker, 1995, p. 6). Not only does human capital influence an individual's ability to sustain a higher standard of living, but it also influences the duration of an individual's lifespan. Further, according to Heckman, (2000) another economist, individuals who begin accruing human capital earlier in life through formal schooling are more apt to have better life outcomes. "Early learning begets later learning and early success breeds later success just as early failure breeds later failure" (Heckman, 2000, p. 5). While human capital accumulation is important for everyone, it has been found to be especially important for individuals with low-incomes, particularly women (e.g.: Alfred

& Martin, 2007; Danziger, Kalil, & Anderson, 2000; Dworsky & Courtney, 2007; Zedlewski, 2002). A review of selected literature that addresses the importance of human capital in the lives of low-income women is presented below.

Human capital among low-income women.

Human capital is an exclusive set of knowledge, information, and skills that individuals accumulate during their lifetimes and utilize to improve their life outcomes. Low-income women are often deprived of opportunities to accrue human capital due to life circumstances that are related to poverty. Throughout history, women have been blamed for falling into poverty and labeled as immoral for being poor whether or not they are responsible for their own poverty (Tiamiyu & Mitchell, 2001). Even women who became poor because their breadwinning husbands died were judged for being poor and were deemed immoral. More recently, environmental problems have been identified as causal factors for poverty among women, but the feminization of poverty is becoming increasingly evident (Tiamiyu & Mitchell, 2001). According to Tiamiyu and Mitchell (2001), evidence that poverty is becoming more of a problem for women is that the prevalence of female-headed households is increasing, women are often relegated to low-paying jobs, women's wages are not equivalent to men's wages, child care is prohibitively expensive without subsidies, and medical care is often too costly to purchase. One remedy for the feminization of poverty is to increase human capital accrual opportunities among low-income women (Tiamiyu & Mitchell, 2001). Since the proposed study will seek to determine whether human capital (i.e., education and employment) is significant in the lives of low-income women and whether it can be utilized as an indicator of more positive life outcomes (i.e., lower levels of mental health problems and substance use problems), the following section provides an overview of

selected literature on educational attainment, employment, and income among low-income women.

The importance of human capital acquisition for low-income women.

Education. The literature indicates that human capital development is the most effective way for people to increase their earning potentials. Education and job training are major components of human capital and people accumulate human capital as investments in their futures (Becker, 1964). For example, people spend tangible capital (money) on things like college and computer training courses in order to increase self-investments. The greater the human capital investments people make in themselves (or their loved ones), the greater the likelihood that their futures will be economically sustainable (Becker, 1964).

Becker (1964) points out that human capital accumulation capabilities in families are passed from generation to generation. This idea is supported by Pandey and Kim (2008) who empirically validated the human capital theory idea that post-secondary education is one of the most important forms of human capital available. In their analysis of national Survey of Income and Program Participation (SIPP) data, they reported that mothers who had at least a college education had a 39% higher income on average than mothers with no high school education. Children who grow up with mothers who have higher levels of education are more likely to have higher incomes than children whose mothers have lower levels of education. In this way, human capital is transmitted from generation to generation (Becker, 1995; Benos, 2010; Kozimor-King, 2008). Because of this generational transmittal, expanding opportunities for low-income women and their children to accrue human capital may also decrease the future generation's likelihood of being forced to rely upon welfare. Single mothers, many of whom are low-income

women who may also be welfare recipients, have been shown to benefit greatly from human capital accumulation. For example, Zhan and Pandey (2004) found, using Panel Study of Income Dynamics (PSID) data, that single mothers with post-secondary education, especially single mothers who had obtained bachelor's degrees, earned significantly more in the workforce, were nine times less likely to live in poverty, and were less likely to receive welfare than single mothers with a high school education or less. Additionally, according to Strawn (2004), welfare policy and programs that emphasize human capital acquisition via post-secondary education have been shown to significantly increase the income of welfare recipients who are, consequently, more likely to maintain employment than welfare recipients with a high school education or less.

Zhan and Pandey (2004) also describe the negative effects of welfare reform on low-income single mothers without post-secondary education and suggest that "devot[ing] resources to promote educational opportunities for poor single parents" (p. 672) is the best way to raise them out of poverty. Further, Strawn (2004) advises that without access to post-secondary education, welfare recipients will continue to struggle in unskilled, low-paying employment and will continue to require government assistance. She suggests that future social welfare policy should include increased provisions for post-secondary education for poor families and low-income women.

While low-income women benefit from human capital they acquire through post-secondary education, they also accumulate human capital in other ways. Many low-income women simply may not be interested in post-secondary education. Other low-income women perceive loans as being off-limits, which nearly guarantees that post-secondary education is out of reach (Mortenson, 2000). According to Mortenson (2000), Pell Grants, which are the major tax-funded mechanisms that directly fund post-

secondary education for lower-income students, are worth about half as much as they were during the 1970s. In fiscal year 2007-2008, 5.5 million students received Pell Grants as financial aid (U.S. Department of Education, 2008), and until the recent ratification of the Healthcare and Education Reconciliation Act, Pell Grant support had not kept pace with the rising costs of post-secondary education (White House Brief, 2010). Another factor reduces the likelihood that low-income women will attend college. They may lack the primary and secondary education necessary to attend post-secondary educational programs. According to the United States Census Bureau (2011) 38% of women in the U.S. have a twelfth grade education or less, indicating that they may lack the basic skills that are needed to attend college or to rise out of poverty. Earnings for these women are also low. In 2009, women without a high school diploma earned an average of $745.00 per month less than women with high school diplomas (United States Census Bureau, 2009).

Low-income women, including welfare recipients, who have low levels of educational attainment and low human capital often have access to general job-readiness training programs, subsidized work experience, job placement services, basic skills training, and English as a Second Language (ESL) courses that are available through TANF block grant funds (Fisher & Martin, 2000). Though these and other adult basic education (ABE) endeavors exist in most states, many of the providers who offer ABE services are disconcerted regarding ABE's new "emphasis on education for employment" because it dilutes the overall purpose of ABE as a "basic academic" experience (Sparks, 2001, p. 135). Sparks (2001) points out that ABE has been shown to help low-income women increase their employment opportunities; however, she also indicates that ABE alone is unlikely to be the best preparation for entering the workforce. Instead, she states,

ABE in concert with job skills training offers low-income women the best prospect for higher wages and better job opportunities (Sparks 2001).

In one study of an ABE program for low-income women, Sandlin (2004) interviewed several participants and identified some common themes described by women in both a GED class and in a job training program. Women in the job training program did not have a high school diploma or a GED. Each of the women stated that they knew they needed to put in a lot of hard work to earn their GEDs, maintain a positive attitude while working toward their GEDs or on learning job skills, and follow the program's rules so that following rules at a future job site would not prove too difficult. Overall, the women in the GED class were more optimistic about future employment opportunities than the women who had no GED and were participating in the job training program. Non-GED students had less hope that they would ever be able to obtain employment anywhere but in low-paying, unskilled labor jobs. These results suggest that women with less human capital know that they are set up for failure both in the job market and in terms of the earnings they will be able to bring home. Low income women with less human capital are likely to remain in poverty for the long term if they are unable to increase their human capital to create better opportunities and life outcomes.

*Employment and earnings.*The accumulation of human capital is most likely to occur when people learn new information and skills that lead to employment stability and higher earnings (Becker, 1964). According to Becker (1995), since the mid-1950s people with college degrees earned up to 50% more than those with high school diplomas. Specifically, he states that "[e]ducation is the most effective way for able young people of poor backgrounds to rise in the economic hierarchy because human capital is the main asset of 90 percent of any population" (p. 9). Price (2005) points out that the current

welfare policy (Temporary Assistance for Needy Families, or TANF) has mandatory work requirements which severely impede recipients' access to post-secondary education that were available to them under former welfare policy (Aid to Families with Dependent Children, or AFDC) which fostered the acquisition of human capital. Price (2005) concludes that TANF policy, which has been in place since 1996, is "the reason that so many public assistance recipients [have left] college" (p. 82). AFDC policy valued the importance of education as the best way for poor families to leave poverty (Weikart, 2005; Center for Women Policy Studies, 2006) while TANF policy views most education as "wasteful" (Weikart, 2005) and promotes a "work-first" agenda that has moved many families from receiving welfare into the ranks of the working poor (Ripke & Crosby, 2002). Thus, when low-income women are transitioned off of the welfare rolls with low human capital, they are relegated to low-paying jobs that maintain their poverty. On the other hand, human capital acquisition through education has been shown to increase employment opportunities and earnings among low-income women.

According to the Bureau of Labor Statistics (2009), in 2008 people who did not complete high school had an average unemployment rate of 9%, people with associate's degrees had a 3.7% average unemployment rate, and people with bachelor's degrees had a 2.8% average unemployment rate. Projected lifetime earnings of people who do not graduate from high school are $1.0 million while people who earn associate's degrees earn $1.6 million during their lifetimes and those who complete bachelor's degrees will have lifetime earnings of $2.1 million (Day & Newburger, 2002). Earnings are especially important for single mothers because children who grow up in families with higher incomes are more likely to do well in school, earn high school diplomas, and make more money than children who grow up in poverty (Zedlewski, 2002).

One reason children grow up in poverty is that many low-income parents who have received welfare are forced to leave the welfare rolls for low-paying jobs due to TANF's time-limits, sanctions for failure to comply with TANF rules, or because TANF work-requirements are too stringent (Hennessy, 2005). Although there are undeniably fewer people on the welfare rolls since TANF policy was instituted, the number of people living in poverty has not declined (Edelman & Ehrenreich, 2009; Lichter & Jayakody, 2002; Corcoran, Danziger, Kalil, & Seefeldt, 2000). In fact, according to Burnham (2007), women and in particular, women of color, are more likely to "earn poverty level wages" (p. 47) when they are not receiving welfare. For example, almost 52% of Latinas, 41% of Black women, and 30% of White women do not earn enough to lift themselves out of poverty. Additionally, among women without high school diplomas, Black women were almost twice as likely (21%) as White women (11%) to be unemployed while Latinas' unemployment rates fell in-between at 16%. Burnham (2007) also points out that women who leave TANF usually work in low-paying, entry-level jobs in the service industry and many times will be worse-off financially than they were when they were receiving TANF. Further, in 2000, the average monthly TANF benefit was $394.36 (U.S. Social Security Administration, 2005) which equals an hourly wage of $2.46 at 40 hours per week and is an average yearly income of $4,732.32. The average monthly income in 2000 for all workers was $2,932.80, which is a 40 hour per week hourly wage of $18.33 (Rasmus, 2004) and is an average yearly income of $38,126.40. Further, according to a National Center for Children in Poverty report (Purmort, 2010), a family living in a moderate- or high-cost area would need to make $20.00 to $25.00 per hour to cover basic expenses and a family living in a lower-cost area would need to make $15.00 per hour. Low-income women who are forced to leave welfare are unlikely to make high enough

wages to support themselves and their families, especially when they have low human capital.

Another issue that highlights problems faced by low-income women who are TANF recipients and are seeking employment is that many times employers are not willing to hire them due to high turnover rates and the extra training many may need (Wen, 2007). It is no surprise then that those who leave TANF have difficulty maintaining employment. Loprest (2003) found that almost 26% of people who recently left TANF had returned, mainly due to unemployment. Among those 26%, over half (14%) were "disconnected leavers" with no government assistance and no employment who were living in extreme poverty. Additionally, Loprest (2003) found that between 1999 and 2002, employment rates among welfare leavers fell 8%, from 50% to 42%, the number of welfare leavers who had no income in 2002 increased 4% since 1999; and wages, hours worked, and benefits of welfare leavers did not change between 1999 and 2002. Blank and Kovak (2008) found that one of the main reasons unemployed TANF leavers had such difficulty finding employment was due to their low levels of education. Overall, low-income women who are TANF leavers could benefit from increased educational opportunities in order to accumulate human capital to lift themselves and their families out of poverty.

According to testimony on welfare reform presented by Dr. Ron Haskins, Senior Fellow at the Brookings Institution, to the Congressional Ways and Means committee in July 2006, TANF improved earnings, reduced child poverty rates, increased the number of poor people in the workforce, and reduced the number of people who were welfare-dependent, leading to improved circumstances for poor children and a smaller number of poor women and families in the U.S. However, Lee (2009) examined the impact of

welfare reform on children and families by analyzing National Longitudinal Survey of Youth (NLSY) data and came to a different conclusion. While she did find that many low-income single mothers left welfare, had higher incomes, and lowered their poverty levels; she also reported that those "higher earnings…were …likely due to longer hours [working] outside the home" in multiple low-paying jobs (p. 612). Specifically, she found that the TANF program more negatively affected single mothers with lower levels of education because they worked more hours in lower paid jobs than single mothers who attended college. Additionally, Lee's findings dispute Haskins' (2006) testimony that children were living in better conditions than they were before TANF. She found that poor children had lower math and reading scores when their mothers had lower levels of education and that single mothers' higher incomes negatively impacted their children. Because single mothers often worked multiple jobs at lower rates of pay, they were gone from home for longer periods of time and therefore were unable to spend as much time with their children after TANF was instituted. These circumstances do not make for the improved life conditions Haskins described in his testimony. Lee concluded by advocating that social welfare policy should make human capital accumulation, not work, its highest priority.

One report specifically addresses Kentuckians receiving TANF benefits (KTAP) and outcomes related to work. The report concludes that KTAP recipients who are working and receiving KTAP benefits are more likely utilize KTAP for longer than individuals who are not working (McAdam, Stone, Barber, & Daugherty, 2002). This finding is interpreted by the authors as positive in that individuals who are working are more likely to also be participating in educational activities. They state that individuals "with education or job training combined with work have better initial and long-term

employment outcomes than those…without work," (Barber, et al, p. 7.3) that is increased earnings and higher incidences of employment (McAdam, Stone, Barber, & Daugherty, 2002, p. 7.6). This finding indicates that the combination of work and education may be an even more powerful indicator of positive outcomes than employment alone specifically among TANF recipients in Kentucky.

The literature suggests that more human capital may be indicative of improved life outcomes for low-income women. Women with more human capital make more money. They also have children who are less likely to live in poverty and who are more likely to accrue more human capital. Additionally, low-income women who have more human capital are more likely to be able to find employment that provides a living wage and are less likely to be forced to rely upon TANF benefits. Current TANF policies and programs do not foster self-sufficiency and independence among low-income women because they do not offer adequate opportunities for human capital acquisition; however women who are able to take advantage of the available educational programs offered or allowed by TANF are able to increase their human capital and claim the independence that comes with greater human capital.

Low income women often strive for the independence that is likely to result from increased human capital, but they are influenced greatly by the people around them. When low-income women have people in their lives who offer them guidance and support, they are often more likely to succeed in endeavors that may lead to self-sufficiency and more positive life outcomes. Positive social support has been shown to be indicative of a higher quality of life (Antonucci & Akiyama, 1987; House, Landis, & Umberson, 1988) and women are particularly influenced by both positive and negative social support.

Social Support

While one aim of this study is to examine human capital among low-income women, this study makes a contribution to the literature by exploring the moderating effect of social support on the relationships between human capital and mental health problems and substance use problems among low-income women. This section will review selected literature on perceived social support.

Social support has been defined as perceptual in that 1) people recognize "that they are loved, valued, and esteemed by others" (Pierce, Sarason, & Sarason, 1992, p. 297) and 2) "that social support [is] available should an individual wish to access it" (Sarason, Pierce, Shearin, Sarason, Waltz, & Poppe, 1991, p. 273). Various researchers have studied social support by examining the ways in which individuals perceive the interactions they have with others around them and how those interactions help them handle stress (Letvak, 2002). Many studies indicate that social support is protective more often when individuals perceive that others are there to assist them if needed; and not when individuals actually provide aid (Cohen, 2004). Social support generally "refers to the function and quality of social relationships, such as [the] perceived availability of help" (Schwarzer & Knoll, 2007, p. 244). According to Letvak (2002), an individual's perception that support is available to her is the best way to determine whether or not she will experience more positive life outcomes. Thus, the way in which an individual perceives another person's actions as helpful or unhelpful informs her whether those actions are positive or negative (Hinds & Moyer, 1997). Not only has social support been shown to contribute significantly and positively to an individual's overall well-being (Barrera, 1986; Cohen & Wills, 1985; Walen & Lachman, 2000), but social support has also been found to have uniquely important implications in the lives of women (Acitelli

& Antonucci, 1994; Ennis, Hobfoll, & Schröder, 2000; Gove, Hughes, & Style, 1983; Jackson, 1999; Simmons, Braun, Wright, & Miller, 2007). In fact, women have been shown to have more extensive systems of social support than men (Antonucci & Akiyama, 1987; Antonucci, Akiyama, & Lansford, 1998; Haines & Hurlbert, 1992) and to take the responsibility for those relationships more seriously than men (Antonucci, Akiyama, & Lansford, 1998). In an examination of the differences between men's and women's social support, Antonucci, Akiyama, and Lansford (1998) found that women reported having an average of at least one more close relationship than did men and that the quality of those close relationships was more important for women. In essence, women are more affected by the close, supportive relationships they have with others.

In general, the literature has consistently shown that individuals with less social support have a lower overall quality of life (Antonucci & Akiyama, 1987; House, Landis, & Umberson, 1988). Thus, individuals who have more social support have an increased likelihood of experiencing a higher quality of life. Underscoring this finding is Thoits' (1995) assessment of the social support literature: "the simplest and most powerful measure of social support appears to be whether a person has an intimate, confiding relationship or not" (p. 64). It has also been found that the number of people providing support is not nearly as important as the quality of the support that is provided to an individual (Letvak, 2002; Lynch, et al., 1999). Generally then, close, intimate, high quality relationships are indicative of an individual's likelihood of having more positive life experiences, and those close relationships are more important for women than for men. In fact, according to Antonucci and Akiyama (1987), it is the quality of social support that women perceive as available to them that has a greater influence on their quality of life as compared to men. Another study by Antonucci, Akiyama, and Lansford

(1998) examined the differences in social ties and social support among 718 men and women and found that women report having a greater number of social ties than men. Walen and Lachman (2000) examined sources of social support among 3,485 women and men and found that women who could rely upon family and friends were better-off in general, but women who reported greater support from their spouses reported even higher overall feelings of well-being. Thus, women not only require higher-quality social support to lead more fulfilling lives, but they also report having a broader range of individuals upon whom they can rely for social support.

Women generally identify their spouses or significant others as their main source of high-quality social support (Gove, Hughes & Style, 1983), however women also identify close friends and family members as solid sources of social support (Thoits, 1995). While Kessler and Essex's (1982) analysis of 2,300 respondents' answers on coping resources within marriage determined that married women and men experience significantly less depression and report significantly more satisfaction with coping and social support than non-married people, Antonucci and Akiyama (1987) found that men's and women's sources of social support are different. While men rely mainly upon their spouses for support, women not only rely upon their spouses, but they also get support from their friends and their children. The implication of these findings is that women have a more extensive system of individuals who provide them with social support; and since researchers have repeatedly identified the importance of social systems on life outcomes (Walen & Lachman, 2000), it is important to consider how those social support systems influence outcomes among low-income women.

Social support among low-income women.

Social support and stigmatization. Low-income women have often been characterized as lazy and undeserving. This overriding societal view has resulted in ongoing stigmatization (Marshall, 1982). One of the most stigmatizing experiences for low-income women is being forced to rely upon welfare payments to support themselves and their families (Marshall, 1982). Davis and Hagen (1996) conducted focus groups with 16 welfare recipients at the behest of the White House Working Group on Welfare Reform and found that the stigmatizing effects of welfare were deeply hurtful to participants and that all of the women felt demeaned and, to some degree, ashamed of their reliance on government assistance. According to Goodban (1985), these negative, self-deprecating ideas stem from one of the overriding sentiments held by the public at large, which is that individuals are responsible for their own life situations and the poor are lacking the moral character to pull themselves up by their own bootstraps. In this point of view, individuals are seen as psychologically deficient and are blamed for being poor.

In an examination of the psychological impacts of welfare receipt, Jarrett (1996) interviewed 84 low-income African-American women, and concluded that women who live in poverty are stigmatized in multiple ways. The respondents reported that they were often judged to be bad parents, were grouped in with other low-income women and not seen as individuals, and were judged by the negative stereotypes that are perpetuated by society (Jarrett, 1996). In actuality, the women rationalized that if they were given better opportunities to achieve self-sufficiency through education, they could improve their situations and move out of poverty (Jarrett, 1996). This rationalization could be one method that helps low-income women cope with the struggles of living in poverty.

Seccombe (2007) has identified other coping strategies that low-income women use to deal with this stigmatization: denial, creating distance between themselves and other low-income women, and assuming an external locus of control. While these coping methods are largely negative, Banyard's (1995) assessment of low income women's coping styles led her to conclude that despite the dearth of resources they have, and often because of this lack of resources, low-income women are innovative in the coping methods they develop to deal with stigmatization.

One important way low-income women cope with life stressors is by accessing their social support systems. According to Thoits (1986), social support can be conceptualized as a practical coping method that helps control unwanted feelings of psychological disturbances like depression and anxiety. Women who are able to talk about their problems with supportive friends or family members are much less troubled than women who do not have confidants (Belle, 1990; Thoits, 1986). A key factor that is likely to determine whether an individual accepts support from others is whether or not their life circumstances are similar (Thoits, 1986). Thus, low-income women often confide in and offer support to other low-income women. However, even women who have confidants can experience stressful life events that may lead to mental health problems.

Social support and mental health problems.

Social support and depression. Many studies have examined social support in conjunction with mental health problems, namely depression (Grav, Hellzèn, Romild, & Stordal, 2012). In fact, depression is one of the most prevalent disorders among those living in the U.S. (Kessler, Chiu, Demler, & Walters, 2005). Depression is a chronic disease which causes a major decline in the quality of life for affected individuals (Üstün,

Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004). Depressive symptoms can be disabling throughout the lifespan and can, at times, result in death (Grav, Hellzèn, Romild, & Stordal, 2012). According to the World Health Organization, by 2030 depression is projected to be one of the greatest causes of burden of disease (i.e., the loss of life due to disease) in wealthy nations including the U.S. (Mathers, & Loncar, 2006). Vilhjalmsson (1993) points out in a review of the literature that many studies have determined that the relationship among social support, life stressors, and mental health problems significantly impacts most individuals at some point during their lives. Thus, it is important to explore the literature on social support and mental health problems.

Recent research on social support and mental health has missed the mark by focusing on the number of individuals who provide social support to those in need rather than on an individual's perception of available social support (Lett, Blumenthal, Babyak, Strauman, Robins, & Sherwood, 2005; Lett, et al., 2009). In general, higher levels of social support have been shown to reduce depressive symptoms (Lynch, et al., 1999; Sherman, Shumaker, Rejeski, Morgan, Applegate, & Ettinger, 2006). Findings across multiple populations indicate that perceived social support is a much more significant predictor of depression than the size of an individual's social support system (Grav, Hellzèn, Romild, & Stordal, 2012; Henderson, 1981; Lett, Blumenthal, Babyak, Strauman, Robins, & Sherwood, 2005; Lett, et al., 2009). One population that is consistently shown to have multiple problems with depression is low-income women (e.g., Belle, 1990; Brown, Bhrolcháin, & Harris, 1975; Coiro, 2001; Dohrenwend et al., 1992; Kahn, Wise, Kennedy, & Kawachi, 2000). In fact, studies have shown that up to 60% of low-income women report symptoms consistent with a diagnosis of depression (Coiro, 2001).

High rates of depressive symptoms are associated with the stress of living in poverty (Belle, 1982). Many studies have demonstrated that there is a significant relationship between poverty and depression. For example, a meta-analysis of 56 studies regarding the relationship between poverty and depression revealed that individuals who live in poverty are nearly twice as likely to be depressed as those with higher incomes (Lorant, Deliège, Eaton, Robert, Philppot, & Ansseau, 2003). The meta-analysis also determined that women are more likely to suffer from depression and are also more likely to have lower incomes than men. Additional findings reveal that poverty-stricken individuals are more likely to experience depressive symptoms on an ongoing basis (OR=2.06) than they are to suffer from a new bout of depression (OR=1.24). Thus, low-income individuals are likely to experience chronic depressive symptoms which may impact them in multiple ways over time.

In another study, Lincoln, Chatters, and Taylor (2005) determined, through an examination of National Comorbidity Survey data, that depression and poverty are related. Specifically, they found that among 591 African-American respondents, depressive symptoms increased as financial strain increased. Essentially, individuals with lower incomes were at greater risk of experiencing depressive symptoms. Further clarifying the relationship between poverty and depression, Dohrenwend, et al. (1992) examined causal mechanisms between socioeconomic status and mental health problems among 4,914 adults. They found that there is a significant relationship between income and mental health. Specifically, they found that individuals with low incomes are significantly more likely to experience depression than those with higher incomes. In addition, they determined that depressive symptoms often occur due to the stressors and adverse conditions caused by low socioeconomic conditions.

Another study explored the prevalence of depression among 8,098 individuals using data from the National Comorbidity Survey (Blazer, Kessler, McGonagle, & Swartz, 1994). They discovered that depression is relatively common among those living in the U.S. Of those surveyed, 17% reported experiencing any depressive symptoms during their lifetimes. Additionally, findings reveal that low-income individuals are over twice as likely to report depressive symptoms, and that women are over one and a half times as likely as men to have suffered from depression during their lifetimes. This finding indicates that low-income women are more prone to experiencing depression. Further underscoring this important finding is Coiro's (2001) review of the literature in which she determined that low-income women regularly report experiencing depressive symptoms during their lifetimes. This depression often results from the unique set of circumstances and problems low-income women are faced with because they live in poverty (Letvak, 2002).

Studies have also determined that having a low-income is uniquely related to depressive symptoms among women. For example, in a classic study of income and depression, Brown, Bhrolcháin, and Harris (1975) examined data that they collected from 334 women; 114 of whom were undergoing mental health treatment, and 220 of whom were randomly sampled from a low-income area. The researchers determined that low-income women are more vulnerable to stress and are therefore more likely to suffer from depression. Over 75% of women in the study reported experiencing severe emotional distress as the result of a major life event in the nine months prior to their study interview. These negative major events were shown to precipitate depressive symptoms and were also shown to be more common among low-income women than women with higher incomes.

In another often-cited study, Belle (1982) and colleagues described depression among a sample of 43 families who participated in the Stress and Families Project. One of the main goals of the multi-faceted study was to explore depression among low-income women. Results of depression measures indicated that low-income women report significantly more depressive symptoms than those in the general population (Belle & Dill, 1982). Several stressors were correlated with depression including money problems, parenting problems, adverse living conditions, and problems with intimate relationships (Makosky, 1982). Overall, 73% of the women reported that their greatest stressor was money problems, which was also the most highly correlated with depressive symptoms (Makosky, 1982). Thus, the study demonstrated that women who experience stress related to income are highly likely to also experience problems with depression.

A more recent study confirmed that depression and low incomes among women are correlated. Kahn, Wise, Kennedy, and Kawachi (2000) examined data from the National Maternal Infant Health Survey on the well-being of 8,060 women and utilized Gini coefficients to measure income distributions in each of the 50 states. They determined that nearly 20% of women reported experiencing depressive symptoms. Further, they found that women who lived in states with high income inequality (i.e., a greater disparity between the rich and the poor) had a 60% greater chance of reporting depressive symptoms. Overall, they concluded that women who have low incomes are at significantly higher risk of experiencing depressive symptoms. This finding is consistent with other study findings in that low-income women have repeatedly been shown to suffer from depression significantly more often than women with higher incomes.

The literature clearly demonstrates that depression intrudes on the lives of low-income women in many ways. Women are affected by depression at rates much higher

than men, and low-income women report even higher rates of depression than do women with higher incomes. Additionally, social support has been shown to have important implications for women in general and for low-income women in particular. A low-income woman's perception of the support available to her is of vital importance when she deals with life stressors. According to Belle (1990), it is important that the psychological effects of poverty are explored in greater depth so that problems experienced by low-income women can be more fully addressed.

In order to address some of the problems experienced by low-income women living in poverty, one study explored the relationship between social support and depression among 173 low-income African-American women who were receiving welfare benefits (Coiro, 2001). Respondents' answers were compared with general population statistics and findings indicate that welfare recipients are significantly more likely to report more depressive symptoms than the general population. Specifically, 40% of the low-income women reported symptoms consistent with a clinical diagnosis of depression. In addition, welfare recipients who had less social support were found to be at higher risk for increased depressive symptoms. Conversely, women who perceived that they had more social support were significantly less likely to report depressive symptoms regardless of the amount of stressors in their lives. Further study findings indicate that even among low-income women, welfare recipients are some of the most harshly impacted by depression and lack of social support. Long-term welfare receipt was found to be correlated with depression, and since depression is likely to weaken a woman's ability to exit welfare, problems experienced by these women may be chronic.

Another study bolsters the view that low-income women are more strongly affected by depression and perceived social support than higher income women.

Sherman, Skrzypek, Bell, Tatum, and Paskett (2011) examined how perceived social support functioned to influence depressive symptoms among White women, Black women, and Native American women. They hypothesized that social support would reduce depressive symptoms among low-income women and that social support would function differently among different races. The first hypothesis was supported in that more perceived social support led to reduced depression levels. The second hypothesis was also supported. White women were shown to be at a significantly higher risk of increased depression when they perceived low amounts of social support were available to them. Specifically, White women who perceived high amounts of social support to be available to them had significantly lower levels of depression than White women with low perceived social support availability. Further, Sherman, Skrzypek, Bell, Tatum and Paskett (2011) observed that Black and Native American women were more resilient than White women when they reported less social support. In other words, White women are at a disadvantage when they perceive that fewer social supports are in place to help them, and they are more apt to suffer from depressive symptoms as a result. On the other hand, women of color are more likely to experience less depression even when they perceive that they have less social support available to them.

Overall, these studies reveal that women are vulnerable when they have low-incomes. Low-income women are much more likely to experience problems with depression. Further, women who receive welfare benefits to support their families are some of the most likely to report problems with depression. In addition, social support has been shown repeatedly to mitigate depressive symptoms among low-income women. However, depression is only one focus of this study. This study will also examine how low-income women are affected by anxiety and whether social support mitigates

problems with anxiety. The following section reviews the literature on social support and anxiety among low-income women.

Social support and anxiety. Anxiety is another highly common disorder among individuals who live in the U.S. (Kessler, Chiu, Demler, & Walters, 2005) particularly among women (Bowers & Gesten, 1986; Ensminger, 1995; Mathiesen, Tambs, & Dalgard, 1999; Mitchell and Ronzio, 2011; Thoits, 2011), and is a disorder that has been widely studied in association with social support (Grav, Hellzèn, Romild, & Stordal, 2012). Cacioppo et al. (2002), Cohen and Wills (1985), Thoits (1986), and Uchino, Cacioppo, and Kiecolt-Glaser (1996) have identified anxiety as a likely outcome when individuals perceive a lack of social support. A World Health Organization study using U.S. National Comorbidity Survey Replication data determined that over 18% of the 9,282 participants reported symptoms consistent with an anxiety disorder (Kessler, Chiu, Demler, & Walters, 2005). This was the most common disorder reported; and was much more common than mood disorders, which followed anxiety disorders at 9.5%. Further, a longitudinal study of 591 men and women that was conducted over a period of 20 years determined that anxiety is a widespread disorder which actually becomes more common as individuals age (Angst, Gamma, Baldwin, Ajdacic-Gross, & Rössler, 2009). Additional results indicate that 31.7% of women suffered from anxiety during the 20 year survey while fewer men, 24%, reported anxiety symptoms during the same time frame. While anxiety is problematic in the lives of many individuals in the U.S., it has been repeatedly shown that anxiety is an important issue in the lives of women (Kawachi & Berkman, 2001).

There is a large body of research and literature examining how social support mitigates health problems. While the examination of health problems in relation to social

support includes mental health and physical health; there is a much smaller body of research and literature that examines the distinct relationship between social support and anxiety specifically among women. In fact, much of the research combines anxiety with depression to create a construct called *psychological distress*, which is reported in the literature. Some researchers have expanded the *psychological distress* construct to measure other mental health problems in addition to anxiety and depression such as alcohol and drug use (Maulik, Eaton, & Bradshaw, 2010). One such study examined psychological distress, which was measured using a combination of anxiety and depression symptoms. It was conducted with 1,269 male and female respondents to measure whether perceived social support mitigated psychological distress stemming from stressful events (Wethington, & Kessler, 1986). The authors did not differentiate between anxiety and depression in the discussion of their results, and identified their findings in terms only of psychological distress. Results indicate that the perception of available support was significantly related to lower levels of psychological distress. While it can be instructive to utilize the construct of psychological distress when describing how both anxiety and depression relate to social support, the aim of this study is to examine the extent to which human capital is associated with mental health problems and substance use problems separately, which is a unique feature of this study. Thus, this portion of the literature review will focus specifically on the relationship between social support and anxiety among women.

Social support and anxiety among women. Women have been shown to experience anxiety at high rates. One cohort study was conducted with 836 low-income African American women in Chicago over a period of 10 years to assess social support and psychological distress (Ensminger, 1995). During the discussion of the study's

results, Ensminger (1995) differentiates between anxiety and depression which make up the construct of psychological distress in the study. Findings indicate that low-income women were likely to report experiencing high levels of psychological distress. In fact, 35.5% of the women reported frequently experiencing an anxious mood. The less income they had, the more likely they were to report problems with anxiety. Additionally, women with lower levels of education were more likely to report that they often experienced anxiety. Notably, the study concluded that women who were welfare recipients were the most likely to report experiencing anxiety. While welfare receipt has been demonstrated to be related to higher levels of mental health problems, women who are not welfare recipients have also been shown to experience problems with anxiety that can be mitigated by social support. For example, Thoits (2011) points out in her analysis of the relationship between social support and mental health among women, that friends and family members often get involved when they detect the emergence of destructive behaviors. In other words, when women are observed by their friends and family members as coping with problems with unhelpful behaviors such as increased alcohol consumption, lack of sleep, and over-eating, they often intervene by offering support, thereby reducing the woman's anxiety levels.

Other studies have demonstrated the importance of perceived social support among women. In one such study, Bowers and Gesten (1986) examined the anxiety levels of 75 women who were put in stressful situations. The women's baseline anxiety levels were measured first. Next, in order to produce feelings of anxiety, they were told that they would be asked several personal questions while being videotaped. The women were told they would be interviewed in one of three ways. The first group of women was told that they would be questioned alone; the second group was informed that they would

be questioned with a stranger in the room; and the third group was told that they would be questioned in the presence of one of their friends. After they were made to wait several minutes contemplating what was to come, their anxiety levels were measured again. The women did not actually participate in the anxiety-provoking interviews. Bowers and Gesten (1986) found that the women who were told they would be interviewed in the company of a friend exhibited significantly fewer symptoms of anxiety than the women who were told they would be interviewed alone or with a stranger. The results of this study demonstrate that even the idea of social support from a friend is likely to reduce anxiety among women. Further, these results show that the absence of social support in a stressful situation is likely to raise anxiety levels.

Another study also sought to understand anxiety and social support among women who are in stressful situations. Mitchell and Ronzio (2011) examined data collected from 209 African American mothers who lived in violence-prone communities and found that, on average, moderate levels of anxiety were reported among women in the sample. Further, they discovered that women who reported having more social support also reported having less anxiety. They concluded that whether a woman experiences acute stress, chronic stress, more intense levels of stress, or less intense levels of stress, she will experience less anxiety if she perceives that she has available social support. This study's findings have important implications for the current/ proposed study in that perceived social support was found to mitigate anxiety among low-income women in stressful situations. Among the proposed study's expected findings is that social support will moderate the relationship between human capital and anxiety; specifically that the more perceived social support a woman reports, the less likely she is to report experiencing problems with anxiety. Mitchell and Ronzio's (2011)

finding that perceived social support is indicative of less anxiety among low-income women confirms that social support does mitigate problems with anxiety reported by low-income women.

Another study sought to examine whether or not the combination of less social support and more stress among low-income women would result in more mental health problems (Mathiesen, Tambs, & Dalgard, 1999). Data from 921 mothers were examined and the study's main hypothesis was upheld. Specifically, they found that women with low-incomes, low levels of education, and who experienced more stressful life events were more likely to experience more anxiety. They also found that women who reported having more social support from friends, family, and spouses experienced reduced anxiety. An additional finding indicates that having a financial problem facilitates the development of anxiety by decreasing the social support that women perceive they have available to them.

Overall, findings from these studies indicate that women are likely to experience anxiety in stressful situations and that the anxiety can be mitigated by the perception of available social support. These few studies on women, anxiety, and social support are important in the context of the current study. Women with low incomes who experience anxiety report that the perception of available social support reduces their anxiety symptoms. While this study seeks to understand how social support may moderate the relationship between human capital and mental health problems including anxiety and depression, this study will also explore whether social support influences the relationship between human capital and substance use among low-income women. Thus, a review of the literature in this area is described below.

Social support and substance use.

While the significance of social support is unique for women, social support has also been studied in conjunction with substance use problems among women. According to National Comorbidity Survey Replication data 8.9% of the U.S. population has a substance abuse or dependence disorder (Kessler, Chiu, Demler, & Walters, 2005), while nearly one quarter of U.S. adults will experience a substance abuse or dependence disorder during their lifetimes (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). According to data from the National Study of Drug Use and Health, nearly 6% of women in the United States are illicit drug users (United States Department of Health and Human Services, 2011). Among low-income women, it is likely that the risk for using non-legal drugs is even higher. These connections are important for women and may shed some light on whether substance use rates are mitigated by social support. This study will examine how human capital is associated with substance use among low-income women and whether social support moderates that relationship.

Low-income women who use drugs often experience "complex and multidimensional" patterns of social support (Strauss & Falkin, 2001, p. 66) which are likely influenced by their unique life experiences, individual histories, and the areas in which they live (Savage & Russell, 2005). Some of the things that may influence the quality of social support that low-income women who are drug-users experience are receiving drug treatment, irregular housing patterns, losing and finding employment, and spending time in jail or prison (Savage & Russell, 2005). These experiences often lead to disruptions in their social support; and it has been shown that social support is significantly related to drug use among women (Brown & Riley, 2005). For example, Staton-Tindall, Royse, and Leukefeld (2007) examined data from 100 low-income

incarcerated women who were drug users to explore whether the women's perceptions of social support were influenced by their drug use. They found that higher rates of drug use were significantly related to less perceived social support and that the women reported smaller social support systems. They point out that this may have occurred due to their incarceration which would have resulted in the women being separated from their usual support systems.

Studies have also shown that women who report having less social support are more likely to report more severe drug use (Myers, Sumner, Ullman, Loeb, Carmona, & Wyatt, 2008). In light of these findings and since social support has been determined to have unique importance in the lives of low-income women (Acitelli & Antonucci, 1994; Ennis, Hobfoll, & Schröder, 2000; Gove, Hughes, & Style, 1983; Jackson, 1999; Simmons, Braun, Wright, & Miller, 2007), several studies in the area of drug use have sought to define the differences in social support between drug-using women and drug-using men. For example, one study examined data from 443 low-income African American women and men crack users to explore whether perceived social support influences drug-using behaviors differently for women and men (Riehman, Wechsberg, Zule, Lam, & Levine, 2008). Research has indicated that social support and close relationships with others can be both positive, motivating factors and negative, obstructing factors for decreasing drug use (Riehman, Wechsberg, Zule, Lam, & Levine, 2008). Study findings support these positive-negative factors and indicate that women and men do differ on the social support they receive. Women reported receiving less support from family members and from friends than did men. Further, study findings reveal that women, 40% of whom reported having a drug-using partner versus only 25% of men, are likely choosing their male drug using partners to ensure that they have access

to drugs, which can be seen as "rational economic-based decisions" (Riehman, Wechsberg, Zule, Lam, & Levine, 2008, p. 98). In short, low-income women often make decisions that will facilitate their drug use based on whether their potential male partners can give them easy access to drugs. According to Rothman, Anderson, and Stein (2008), this type of behavior is not unusual. Women with low incomes often perpetuate their drug use and dependency by choosing to rely on others, usually their sexual partners, to provide them with drugs (Rothman, Anderson & Stein, 2008). In fact, Rothman, Anderson, and Stein (2008) point out that while low-income women may have no problem with getting money, drugs, and a place to use drugs due to their dependency on their drug-using male partners; they are often cut-off from their non-drug using sources of social support which only fosters their dependency on their drug-using partners. These types of ongoing negative social support may often make it difficult for low-income women to decide whether or not to seek treatment for drug use. Sometimes women are encouraged by their supports to do so, and sometimes they are not.

One study explored whether women's support systems were more encouraging of positive drug-use-ending behaviors than men's. Epstein, Hourani, and Heller (2004) examined data from 3,291 women and men who participated in the 2000-2001 National Household Surveys on Drug Abuse (NHSDA). Findings indicate that women who stated that they did not have social support available to them were almost 4 times as likely to enter drug treatment when compared with men who did have social support. Though these findings differ from the authors' expectations, a possible reason for these findings described by the authors is that women without social support are likely to have received treatment because many report a mental health diagnosis alongside their drug use,

thereby underscoring the need for treatment for more than one disorder (Epstein, Hourani, & Heller, 2004).

Another study comparing social support between women and men also found that comorbidity was a factor. Risser, Cates, Rehman, and Risser (2010) examined social support and depression among 471 low-income female and male drug users in Houston. Their main findings indicate that women have more perceived social support from friends and spouses or partners than men. Further, women who reported greater social support from their spouses or partners were significantly less likely to experience depression than their male counterparts. The authors conclude that new interventions could be tailored specifically to increase perceived social support and decrease depression simultaneously and would therefore be beneficial and protective.

Such interventions are often introduced in drug treatment programs. Some studies have examined the impact of social support on women who are giving up drugs. Lewandowski and Hill (2009) asked 117 low-income women who were entering a residential drug treatment program about their perceptions of the social support they receive from family and friends as well as drug treatment, welfare, and other agencies with which they are involved. Women who reported that they perceived emotional social support from their family members were more likely to complete treatment and to report greater emotional support from family and friends after treatment completion (Lewandowski & Hill, 2009). On the other hand, women who reported that they received a different type of support, financial support, from either welfare payments or from their partner were less likely to complete treatment. Overall, Lewandowski and Hill (2009) found that low-income women who have more perceived emotional social support are likely to have greater feelings of self-worth than low-income women who continue to

receive financial support since the financial support is likely to lead to lower feelings of self-worth and increased dependency.

Social support is an important feature in the lives of low-income drug-using women and social support can be both positive and negative for these women. A woman's support system can either encourage or discourage continued drug use (Brown & Riley, 2005). With positive social support, low-income women who use drugs are more likely to exhibit behaviors that are consistent with maintaining sobriety, lower levels of drug use, a lower likelihood of relapse, and higher rates of success with treatment programs (El Bassel, Chen, & Cooper, 1998). On the other hand, some low-income drug using women report negative social support which often comes from other drug users and individuals who are unlikely to promote abstinence from drugs (Brown & Riley, 2005). Research has determined that individuals are at significant risk of initiating or continuing drug use when they are involved with drug users (Havassy, Wasserman, & Hall, 1995). Thus, the negative support that low-income women receive from other drug users in their support systems often results in relapse (Jason, Davis, Ferrari, & Bishop, 2001). In a study of 534 low-income women in Houston, about one third of whom were drug users, Brown and Riley (2005) found a significant relationship between negative social support and drug use. Specifically, they found that low-income, drug-using women identified a greater number of drug users in their social support systems than low-income women who were non-drug-users and were therefore less able to become self-reliant.

Savage and Russell (2005) also examined data from drug-using women with low incomes. Their findings also indicate that negative social support is damaging to drug-using women with low incomes. They compared two samples of low-income women; 259 women in New York City and 385 women in Northern California. They found that

significant numbers of women in both samples had used drugs with someone in their social support system in the last three months. However, they also found that nearly all of the women (86% of the women in the New York sample and 91% of the women in the Northern California sample) indicated that at least one person in their social support system had encouraged them to stop using drugs. In addition, they found that low-income, drug-using women have a great deal of support from their families, but that it is not always positive support. Many of the women identified their family members as providing little in the way of emotional support as well.

In addition to problems with family members in their social support systems, low-income drug using women with larger social support systems are also at risk of beginning drug use at a younger age (Wu, Eschbach, & Grady, 2008). Social support systems are known to be important in the "transmission of information, beliefs, and resources" and may derive from low-income neighborhoods where the women live (Wu, Eschbach, & Grady, 2008, p. 136). Peer support systems are especially influential and can have negative consequences for young women's drug initiation and use (Savage & Russell, 2005; Wu, Eschbach, & Grady, 2008). In fact, peers are one of the most influential sources of negative support among young women drug users (Wu, Eschbach, & Grady, 2008). Wu, Eschbach, and Grady (2008) found, in an examination of data from 712 young (18-31 years old) low-income women, that the greater the number of individuals in a young, low-income woman's social support system, the more likely she was to report increased drug use. The young women in the study who reported having more friends also reported using drugs themselves as well as having greater numbers of friends who were drug- users. Subsequently, as low-income women drug-users grow older and continue to associate with the same individuals in their support systems, their negative

patterns of support are likely to remain consistent which may enable or exacerbate their drug use (Strauss & Falkin, 2001). Strauss and Falkin (2001) explain that individuals who provide negative social support to women drug-users often "encourage the women's drug use in several ways, including using drugs with the women, giving them drugs or money to buy drugs, providing a place for them to use drugs, or taking care of their children while they are high" (p. 67). These kinds of negative support systems that encourage drug use are not limited to only young women with low-incomes, but to low-income women across the life span.

One such study examined data from 100 low-income women, 85% of whom were over the age of 30. The women had criminal histories and were participating in court-mandated drug treatment programs (Strauss & Falkin, 2001). Findings indicate that the social support systems of these older women are fairly large, are made up of an average of 9 individuals, and are evenly split between men and women. Findings also indicate that these older women identified their parents and significant others as their main sources of support. In particular, the women reported having close supportive relationships with their mothers. This support, however, was not always viewed by the women as positive. Instead, nearly half of the women expressed disappointment with the support they received. Specifically, many of the women indicated that they were upset at receiving either unwanted support from family members and partners or at not receiving the support they thought they should have received.

Even when women are in contact with their usual support system members, they may sometimes feel unsupported. In an analysis of two qualitative studies, Trulsson and Hedin (2004) describe how social support impacts low-income women while they are quitting drugs. The women explained that they regularly had support from family

members due to "lasting emotional ties and expectations of mutual support and help" (Trulsson & Hedin, 2004, p. 150). The women also said that their closest female relatives (i.e., their mothers, grandmothers, and sisters) provided the greatest amount of social support for them on a regular basis. However, the women also said that some of their family members, often brothers and sisters, were "critics" and blamed the women for creating and perpetuating all of their own problems (Trulsson & Hedin, 2004). Overall, findings indicate that social support plays a key role in whether or not a low-income woman is successful in quitting drugs. If women with low incomes perceive greater stability among their support systems, if they can establish new supportive relationships with non-drug- users, and if they can develop positive, supportive relationships with social workers, they are more likely to quit using drugs and to maintain sobriety (Trulsson & Hedin, 2004). The women identified support from social workers as extremely important in quitting drugs. Many low-income women said that having an impartial person with whom to discuss their drug use and problems stemming from it was instrumental in increasing their odds of quitting drugs (Trulsson & Hedin, 2004).

Overall, low-income women may be at increased risk of using drugs, particularly if they have limited social support. The literature shows that low-income women who use drugs experience both positive and negative social support throughout their lifetimes. Women who perceive more positive social support are more successful in quitting drugs, completing drug treatment, and becoming more independent. On the other hand, women with more negative support are more likely to begin and continue drug use, exit or fail to initiate drug treatment, and remain dependent on others; usually their male partners. Overall, the literature indicates that low-income women are more vulnerable to drug use when they perceive that they have limited and/or negative social support.

Summary

Because human capital is conceptualized for this study as being a continuum with more education, higher income, and a history of working at one end of the continuum and less education, lower income, and a limited work history at the other end of the continuum, it allows for the examination of human capital in a unique way. This study views low-income women based on their strengths while previous studies have generally viewed low-income women as having few strengths (i.e. in terms of their deficits). This study is unique in that low-income women are described in terms of their positive characteristics (i.e., their strengths) rather than being defined by their deficits or in terms of their output. By utilizing this strengths-based social work perspective, this study examines the difficulties faced by low-income women in a unique way.

The literature demonstrates that low-income women have unique challenges with human capital acquisition and social support. Low-income women have been shown to have difficulty gaining access to post-secondary education, job training, and adult basic education. The deficits that result from this are associated with the human capital that low-income women are able to accrue. Some programs are in place under TANF that presumably assist low-income women with human capital acquisition; however, not all low-income women participate. As a result, the challenges associated with low human capital among low-income women often include struggles with mental health problems and substance use which can have a damaging impact on their children as well. This intergenerational consequence of limited human capital to be passed on may also serve to perpetuate poverty in generation after generation.

Low-income women have been shown to have persistent problems with social support, mental health problems, and substance use. Low-income women often perceive

the social support in their lives as absent or lacking in quality. Less perceived social support, in turn, is likely to result in higher rates of depression and anxiety among low-income women. Further emphasizing the importance of social support among low-income women, those with less social support, low quality social support, or negative social support may succumb to drug use. Once these women initiate drug use, those with less social support are likely to continue using drugs, remain dependent on their male partners, and are unlikely to achieve independence.

Human capital, social support, mental health, and drug use are all important factors in the lives of low-income women. This review of the literature demonstrates that the relationships between these factors are complex. The complex nature of these relationships only serves to reinforce that further exploration of these factors is warranted. This study examines human capital and social support among low-income women and their associations with critical behaviors including substance use and mental health. Due to the relationships between these factors that were identified in the review of the literature, it is expected that, among low-income women, increased human capital will be associated with decreased mental health problems and drug use problems, and that social support will moderate those relationships.

Chapter 3: Methodology

A review of the literature has demonstrated that further empirical research on the relationships between human capital and social support, mental health problems, and substance use problems among low-income women is warranted. This study examines the extent to which human capital is associated with mental health problems and substance use problems and whether those associations are moderated by social support among a unique, vulnerable sample of low-income women. Direct relationships among these variables will be examined in the proposed study. Chapter three describes the proposed study's methodology.

Sample Description

This study utilizes secondary data collected from 11,495 low-income women who participated in the University of Kentucky's Targeted Assessment Program (TAP) between July 2005 and July 2011. The Department for Community Based Services (DCBS), a division of the Kentucky Cabinet for Health and Family Services (KCHFS), contracts with the University of Kentucky's Center on Drug and Alcohol Research (UK-CDAR) to implement and collect data for the TAP program. TAP participants come from 33 Kentucky counties that were purposefully selected by DCBS according to an increased need for additional services for those DCBS-involved clients. Most TAP participants are referred by DCBS child service workers and family support workers when they determine that a woman presents with more severe issues, such as mental health problems and substance use problems, which require additional assessment and intervention. TAP Specialists work one-on-one with the individuals in the program to assist them with problem-solving and with meeting the sometimes long list of needs for themselves and their families. As part of the TAP intervention, participants are asked to complete a

baseline assessment which is the source of the data utilized for this study. The average age of the women in the proposed study is 29.0 years. The majority of the women are white (83.2%), 41.5% have never been married, and over 70% have at least 2 children.

Procedures

Once a woman has been referred to TAP, TAP Specialists enroll participants in the study utilizing human subject protocols that have been approved by the University's Institutional Review Board (IRB). TAP Specialists, who are master's-degreed clinicians with certification credentials, collect data with personal digital assistants (PDAs) utilizing a structured interview. PDAs are synchronized directly with a secure server and assessment information is encrypted and uploaded immediately upon interview completion. The Data Coordinator then accesses the data through ACCESS tables, exports, and recodes those data for analysis.

Protection of human subjects.

Individuals who agree to participate in the research component of TAP sign University of Kentucky Institutional Review Board-approved consent and confidentiality forms. TAP Human Subject Protection ensures that: all participants are thoroughly informed of their rights as human subjects, participants are told how their confidentiality is maintained by investigators and TAP Specialists as well as exceptions to confidentiality, and participants are told that the information they provide to TAP Specialists will be confidential since names are not attached to any information.

Measures

All data for this study includes secondary analysis from measures that come from self-report questions asked of respondents by TAP Specialists during a baseline assessment. Individual variables as well as summative scales have been utilized to

examine data in the current study. Summative scales were computed for overall human capital, perceived social support, depression, anxiety, substance abuse, and substance dependence. However, each variable was also examined individually.

Conceptual and operational definitions.

Human capital. Definitions of human capital identify education, income, and employment as factors that individuals accumulate and possess in unique combinations and utilize to improve opportunities and increase positive outcomes throughout their lifetimes (Becker, 1962, 1964; Schultz, 1961; Gao, Gill, Schmidt, & Pratt; 2010). For this study, human capital is conceptualized through the perspective of the social work profession which takes into account that each individual has a set of strengths that she utilizes to meet life's challenges. Human capital is also conceptualized as a continuum with more education and employment on one end of the continuum and less education and employment on the other end of the continuum. Thus, for this study low-income women (i.e., 200% of the poverty line or greater) who have accrued more education (i.e., more years of school, attended post-secondary education, have a GED) and more employment (i.e., currently employed; held a job for a longer time during their lifetimes; have worked more months for pay; or volunteered longer) have more human capital than individuals with fewer years of school, who have not completed high school, who have held a job for a shorter time during their lifetimes, and who have worked fewer months for pay or volunteered for a shorter amount of time.

All of the women in the current study have low incomes. In order to qualify for the study, women must have incomes that are 200% of the poverty line or less. Additionally, seventy percent of the women in the current study receive welfare (KTAP) benefits, which comprise the majority of their incomes. KTAP (Kentucky Transitional

Assistance Program) the name of Kentucky's TANF (Temporary Assistance for Needy Families) program, which is the U.S. welfare program. One of the basic requirements for individuals who receive KTAP is to work or volunteer at least 20 hours per week in order to receive benefits. Many women who receive KTAP elect to volunteer their time instead of working for pay. In fact, in the current study, less than one quarter of the women (23%) were currently working for pay. Women who receive KTAP benefits often decide to volunteer instead of working for pay for many reasons including 1) KTAP benefits are reduced accordingly, and may be discontinued completely if women work for pay; 2) multiple appointments with KTAP case workers, child protection workers, and other service providers may preclude women from being able to find an employer who will accommodate their needs in this arena; 3) women may not possess the necessary skills or knowledge to hold a paying job and 4) women gain experience, skills, and knowledge through volunteer work. Thus, volunteer work is an indicator of human capital for the women in the proposed study.

Human capital is the primary independent variable for the current study and is operationally defined as a combination of variables. Since all of the women in the proposed study have incomes at or less than 200% of the poverty level, each of them has a low income. However, proxy income measures (i.e., KTAP receipt and Social Security Insurance (SSI) receipt) are included as control variables to assess the degree to which low-income women's incomes may influence the study's dependent variables.

1. *Education:* Two measures of education were examined:
    A. *Number of years of school completed*: Measured by self-reports of actual years.
    B. *Current education:* A categorical measure of self-reported type of

school in which participants are currently enrolled including *none, high school, GED, vocational school, and college (i.e., Associate's degree, Bachelor's degree, Master's degree)*. Variables will be re-coded as dummy variables with 0=not enrolled in any educational activity and 1=enrolled in any educational activity.

2. *Employment:* Four measures of employment were examined.

   A. *Current work for pay*: A self-reported measure of the number of hours an individual is currently working for pay.

   B. *Previous work for pay*: A self-reported measure of the number months it has been since an individual last worked for pay.

   C. *Current volunteer work without pay*: A self-reported measure of the number of hours per week an individual works without pay.

   D. *Longest time at one job:* A categorical measure of self-report number of years an individual ever spent at one job or with the same employer including *less than one year, 1 – 2 years, 2 – 5 years, and 5 or more years*. Variables will be dummy coded with 1=less than one year, 2=1 – 2 years, 3= 2 – 5 years, and 4=5 or more years.

Each of these variables were examined as individual independent variables. In addition, an overall human capital scale was computed once univariate information was obtained for each of the human capital variables. The scale encompasses information from each of the human capital factors and can help determine whether a woman has more or less human capital in bivariate and multivariate analyses. This scale allows for further analysis of human capital in addition to analysis of each individual human capital factor.

Control variables.

Control variables were utilized in the analysis to assess their influence on the study variables. The control variables include age, marital status, number of children, and income source. The impact of each of these variables is important in regard to human capital and social support. The literature review reveals important distinctions concerning social support among different age groups (Antonucci & Akiyama, 1987; Holahan, Moos, Holahan, & Brennan, 1995 Lynch, Mendelson, Robins, Krishnan, George, Johnson, & Blazer, 1999; Matheson, Tambs, & Dalgard, 1999 Matt & Dean, 1993), and with regard to marital status (Acitelli & Antonucci, 1994; Gove, Hughes, & Style, 1983; Riehman, Wechsberg, Zule, Lam, & Levine, 2008; Walen & Lachman, 2000). The number of children in a family has also been examined in regard to human capital (Harris, 1996; Lens, 2008; Zhan & Schreiner, 2005). The literature review indicates that welfare receipt status is important in that it may impede human capital acquisition (Coiro, 2001; Danziger, Kalil, & Anderson, 2000; Davis & Hagen, 1996; Ensminger, 1995; Goodban, 1985; Hennessy, 2005; Jarrett, 1996; Kozomor-King, 2008; Price, 2005; Ripke & Crosby, 2002; Weikart, 2005) even though it increases a family's income. In addition, whether or not a low-income family receives social security benefits is important because benefit receipt can increase a low-income family's income while leaving the family eligible to receive KTAP benefits for the children (Stromwall, 2001). These variables are, therefore, important control variables for the current study. The operational definitions of the control variables are:

1. *Age*: A computed measure from participants' self-reported birth dates.
2. *Marital status*: A categorical measure of self-reported marital status

including *married, living with spouse; divorced; separated, not living with spouse; widowed; and single, never married*. Marital status will be treated as a dichotomous dummy-coded variable (0=never married, 1=ever married (i.e., married, living with spouse; divorced; separated, not living with spouse; and widowed).

3. *Number of children*: A self-reported measure of number of children. Number of children will be coded from zero to 5 or more children with 0=zero children, 1=one child, 2=two children, 3=three children, 4=four children, and 5=five or more children.
4. *Income*: Two proxy measures of income were examined as control variables.
    A. *KTAP receipt*: A self-reported measure of whether or not an individual receives KTAP benefits with 0=no and 1=yes.
    B. *SSI receipt*: A self-reported measure of whether or not an individual receives SSI benefits with 0=no and 1=yes.

Perceived social support.

Perceived social support has been defined as an individual's belief that she is valued by others and that support is available from those who value her should she need it (Pierce, Sarason, & Sarason, 1992; Sarason, Pierce, Shearin, Sarason, Waltz, & Poppe, 1991). Perceived social support is important in that it has been found to be protective for individuals even when no actual aid is received (Cohen, 2004). Thus, based on the literature review, perceived social support is conceptually defined as an individual's belief that others are willing to render support, be it emotional or otherwise, when she is in need of such assistance. The literature has demonstrated that support is often perceived as being available from family, friends, support groups, residential treatment settings, and

from counselors. Theory holds that perceived social support has inherent value as a moderator of negative life events (Cobb, 1976). Thus, for the proposed study, perceived social support is being examined as it relates to mental health and substance use among low-income women.

Perceived social support is the potential moderating variable for this study. It is defined as the answer to five questions which comprise two indicators of perceived social support:

Support from friends and family: A composite of two questions asking how much difficulty a woman has had getting along with her friends and her family members.

Possible responses are on a continuum: *None, A little, Some, Considerable*, and *Extreme* and will be reverse-coded with lower values indicating less perceived social support and higher values indicating more perceived social support (5= *None,* 4=*A little*, 3=*Some*, 2=*Considerable*, 1=*Extreme*). The literature demonstrates that measures of difficulty getting along with others are valid indicators of social support (Joe, Broome, Rowan-Szal, & Simpson, 2002; Strauss & Falkin, 2001). According to the literature, when women perceive less conflict in relationships, they are more likely to report that they believe family members and friends are available to provide aid and support should they need it (e.g., Savage & Russell, 2005). Thus, a woman who responds that she has *a little* difficulty getting along with friends is likely to perceive that she has social support available from her friends while a woman who responds that she has *extreme* difficulty getting along with friends believes she has little or no social support available.

Mental health problems.

Mental health problems, specifically depression and anxiety, are two of the dependent variables for this study. Depression (Coiro, 2001) and anxiety (Mitchell & Ronzio, 2011) have been shown to be prevalent not only among low-income women but in the general U.S. population (Grav, Hellzèn, Romild, & Stordal, 2012). Depression often leads to poor life outcomes including a lower quality of life (Üstün, Ayuso-Mateos, Chatterji, Mathers, & Murray, 2004) and even death (Grav, Hellzèn, Romild, & Stordal, 2012). Anxiety is also a widespread problem. One study found that nearly 20% of individuals in the U. S. suffer from an anxiety disorder, (Kessler, Chiu, Demler, & Walters, 2005) and another study found that over 30% of women report symptoms consistent with an anxiety disorder (Angst, Gamma, Baldwin, Ajdacic-Gross, & Rössler, 2009). For this study, the conceptual definitions of variables are based on the literature review. Depression is conceptually defined as a chronic disabling condition that often results from poverty and causes poor life outcomes. Anxiety is conceptually defined as a disabling condition that is often caused by crises that occur due to poverty and which often results in psychological distress.

Depression. For this study, depression is measured with the self-reported responses to 9 DSM-IV questions based on diagnostic criteria for major depressive disorder, which other studies have also utilized (e.g., Andrews, Sunderland, & Kemp, 2010; Langolis & Martin, 2008). Responses are dichotomous yes/no answers and are coded as 0=no, 1=yes. Responses were summed and computed into a scale with values ranging from zero to 9 with zero representing no depression and 9 representing more depression. In the study analyses, the scale was examined as an overall score for depression.

The questions that comprise the depression scale are: Have you been bothered by any of the following problems more often than not in the past 3 months: 1) Little interest or pleasure in doing things?; 2) Have you felt down, depressed or hopeless?; 3) More often than not in the past 3 months, have you had trouble falling asleep or staying asleep?; 4) Have you felt tired or had little energy?; 5) More often than not in the past 3 months, have you had a poor appetite or were overeating?; 6) Have you felt badly about yourself?; 7) More often than not in the past 3 months, have you had trouble concentrating on things?; 8) Have you moved or spoken so slowly that other people could have noticed?; and 9) Had thoughts of hurting yourself in some way or that you would be better off dead?

Anxiety. Anxiety is also measured with self-reported answers to questions based on DSM-IV diagnostic criteria, which is in keeping with other studies on anxiety (e.g., Andrews, Sunderland, & Kemp, 2010; Carter, Wittchen, Pfister, & Kessler, 2001). There are 9 questions that assess respondents for generalized anxiety disorder. Each response is a dichotomous yes/no answer that is coded as 0=no and 1=yes. Responses were summed and computed into a scale ranging from zero to 9 with zero representing no anxiety and 9 representing more anxiety. The scale was examined in the study analyses as an overall score for anxiety.

The questions that make up the anxiety scale are: 1) Over the past 3 months, have you worried excessively or been anxious about several things?; 2) Are these worries present most days?; 3) Do you find it difficult to control the worries or do they interfere with your ability to focus on what you are doing?; 4) When you were anxious over the past three months, did you, most of the time feel restless, keyed up or on edge?; 5) When you were anxious over the past three months, did you, most of the time feel tense?; 6)

When you were anxious over the past three months, did you, most of the time feel tired, weak or exhausted easily?; 7) When you were anxious over the past three months, did you, most of the time have difficulty concentrating or find your mind going blank?; 8) When you were anxious over the past three months, did you, most of the time feel irritable; and 9) When you were anxious over the past three months, did you, most of the time have difficulty sleeping (difficulty falling asleep, waking up in the middle of the night, early morning wakening or sleeping excessively)?

Substance use problems.

Substance use problems, namely substance abuse and substance dependence, are the other two dependent variables for the current study. The review of the literature has demonstrated the negative impact of substance use and has shown that nearly a quarter of the individuals in the U.S will experience substance abuse or dependency problems during their lifetimes (Kessler, Berglund, Demler, Jin, Merikangas, & Walters, 2005). The literature also illustrates the negative role that substance abuse and substance dependence play in the lives of low-income women (e.g., Riehman, Wechsberg, Zule, Lam, & Levine, 2008). Specifically, about half of the TAP study participants have reported the use and/or abuse of substances (Carlton, Delaney, Ramlow, & Leukefeld, 2009; Ellerbe, Carlton, Ramlow, Leukefeld, Delaney, & Staton-Tindall, 2011; Leukefeld, Carlton, Staton-Tindall, & Delaney, 2012). Based on the literature, substance abuse is conceptually defined as a pattern of substance use that disrupts the lives of women and results in negative life outcomes; and substance dependence is conceptually defined as a severe pattern of substance use that strongly interferes in the lives of women, often with especially negative results.

Substance abuse. For this study substance abuse was measured with a scale computed from self-reported answers to 4 DSM-IV diagnostic criteria questions. Responses are dichotomous yes/no answers and are coded as 0=no and 1=yes. Responses were summed into a substance abuse scale that ranges from zero to 4 with 4 representing alcohol abuse and zero representing the absence of alcohol abuse. In this study, the scale was examined as an overall score for substance abuse.

Questions that comprise the substance abuse scale are: 1) In the past 3 months, have you sometimes neglected important obligations to your family or friends because you were using alcohol and/or drugs?; 2) In the past 3 months, have you used drugs and/or alcohol when you were likely to do something that was made more dangerous by your use like driving a car or boat or operating machinery?; 3) In the past 3 months, have you been arrested on a charge related to the use of drugs and /or alcohol or while you were under the influence of drugs and/or alcohol?; and 4) In the past 3 months, have you often had arguments with family members about your use of drugs and/or alcohol or while you were under the influence of drugs and/or alcohol?

Substance dependence. Substance dependence was also measured with a scale computed from self-reported answers to DSM-IV diagnostic criteria. There are 7 dichotomous (yes/no) questions (0=no and 1=yes) that make up a scale ranging from zero to 7 with zero indicating the absence of substance dependence and 7 indicating substance dependence. In study analyses, the scale was examined as an overall score for substance dependence.

The questions that make up the substance dependence scale are: 1) In the past 3 months, have you found that you have to use more drugs and/or alcohol than you used to get the same effect?; 2) In the past 3 months, have you ever experienced symptoms like

shaking, difficulty sleeping, nausea, agitation, seizures, or other problems when you attempted to stop using drugs and/or alcohol or cut back significantly on the amount you were using? Or have you ever taken alcohol and/or drugs to get over feeling shaky or sick after a period of heavy use?; 3) In the past 3 months, have you often found that you use more drugs and/or alcohol than you intend or that you use drugs and/or alcohol for a longer time than you intend?; 4) In the past 3 months, have you wanted to stop using, or cut down on drugs and/or alcohol more than once, but found that you couldn't?; 5) In the past 3 months, have you spent a good deal of time thinking about drugs and/or alcohol or planning your next use of drugs and/or alcohol?; 6) In the past 3 months, have you given up activities that you once found enjoyable, neglected important obligations to your family or friends, or gotten into trouble at work (or school) because of your use of drugs and/or alcohol?; and 7) In the past 3 months, have you continued to use drugs and/or alcohol when you had a medical or emotional problem that you thought might be caused by your use or worsened by your use, or if your use of drugs and/or alcohol affected your performance on the job or at school? (i.e., causing you to be late or to leave early or to miss work (school) altogether or to have trouble focusing on your work?)

Data Analysis

The analytic approach for the this study incorporates univariate, bivariate, and multivariate analyses. Univariate analyses provide descriptive information about each of the variables and include frequencies and measures of central tendency when appropriate. Bivariate analyses describe the relationships between human capital and depression, anxiety, substance abuse, and substance dependence symptoms. Correlations between perceived social support and each of the study variables were also examined. Correlations help determine whether there are any preliminary indications of significant relationships.

Bivariate correlations also provide an initial indication as to whether or not there are violations of any of the assumptions of OLS regression such as linearity and multicollinearity, though none were anticipated. Multivariate OLS regression were utilized to examine the variance that is accounted for in each of the dependent variables by the independent variables. Specifically, OLS regression analyses determined how much of the variance in depression, anxiety, substance abuse, and substance dependence symptoms is accounted for by human capital among low-income women. Direct relationships between human capital, social support, mental health problems, and substance use problems were examined. In addition, interaction terms were created between each human capital variable and each perceived social support variable in order to test whether perceived social support moderates the relationship between human capital and mental health and substance use. OLS regression analyses tested each of the study's hypotheses.

Study Hypotheses

Each of the study hypotheses is supported by the literature review and all study hypotheses were tested with multivariate OLS regression analyses.

H_1: Adjusting for control variables, greater overall human capital is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women.

H_2: Greater educational achievement is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables.

H_3: A history of regular employment is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables.

Human capital has been shown to influence depression, anxiety, and substance use among low-income women which provides support for the first three hypotheses. However, human capital has not been examined as an indicator variable in previous studies. Previous studies have shown that there are significant positive correlational relationships between greater human capital and more positive life outcomes such as less depression (Bhrolcháin, & Harris; 1975; Kahn, Wise, Kennedy, and Kawachi, 2000; Makosky, 1982), less anxiety (Ensminger, 1995; Mitchell & Ronzio, 2011), and lower rates of substance use disorders (Savage & Russell, 2005).

H_4: Perceived social support is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables.

H_5: When adjusted for control variables, perceived social support will moderate the relationship between human capital (including overall human capital and each individual human capital factor, (i.e. education and employment)) and depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems. Specifically, women with more perceived social support have more human capital which leads to even fewer mental health problems and substance use problems than women with low perceived social support when adjusted for control variables.

Perceived social support has been investigated many times as a moderator in accordance with the stress-buffering theory of social support (Cobb, 1976). However, the literature review for the current study did not reveal any instances of perceived social support being examined as a moderator of relationships between human capital and depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women. This study fills the gap in the literature as perceived social support was examined as a moderator in relation to these new (different) variables.

The hypotheses examine factors (i.e., age, marital status, number of children, and income source) that have been linked to the study variables and are included in the proposed study as control variables. Age, marital status, and number of children are of particular interest in human capital studies (e.g., Becker, 1964; Loprest, 2003; Tiamiyu & Mitchell, 2001; Wen, 2007; Zhan & Pandey, 2004) and marital status was found to be related to human capital in one exploratory study (Leukefeld, 2011). Whether low-income individuals receive income from welfare and/or from social security insurance has also been shown to be important in other studies on human capital (e.g., Stromwall, 2001; Coiro, 2001; Danziger, Kalil, & Anderson, 2000; Davis & Hagen, 1996; Ensminger, 1995; Goodban, 1985; Hennessy, 2005; Jarrett, 1996; Kozomor-King, 2008; Price, 2005; Ripke & Crosby, 2002; Weikart, 2005).

Chapter 4: Results

This study is unique in that it examines human capital as an independent variable. Because human capital is conceptualized for this study as being a continuum with more education, higher income, and a history of working at one end of the continuum and less education, lower income, and a limited work history at the other end of the continuum, it has allowed for the examination of human capital in a unique way. This study views low-income women based on their strengths while previous studies have generally viewed low-income women as having few strengths (i.e. in terms of their deficits). This study is unique in that low-income women are described in terms of their positive characteristics (i.e., their strengths) rather than being defined by their deficits or in terms of their output. By utilizing this strengths-based social work perspective, this study examines the difficulties faced by low-income women in a unique way.

Data analyses for this study included the examination of univariate, descriptive information for each study variable as well as bivariate and multivariate relationships to determine whether human capital was related to mental health and substance use problems among low-income women and whether those relationships are moderated by perceived social support. Control variables included in this study are age, marital status, number of children, KTAP receipt, and SSI receipt; and although they are not the focus of this study, the review of the literature indicates that these variables are important when describing low-income women.

Table 4.1: *Descriptive statistics for all study variables (n=11,495)**

	n	%
Race		
White	9572	83.3
Black	1551	13.5
Other	372	3.2
Marital status		
Never married	4750	41.3
Ever married	6745	58.7
KTAP receipt		
No	8118	70.6
Yes	3349	29.1
Missing	28	0.2
SSI receipt		
No	10310	89.7
Yes	1185	10.3
Current educational enrollment		
None	9912	86.2
GED	649	9.6
High school	46	0.4
Vocational/Technical	210	1.8
Associate's degree	506	4.4
Bachelor's degree	164	1.4
Master's degree	8	0.1
Longest time spent at one job		
0 months to 2 years	5449	47.4
2 years to 5 years	3535	30.8
5 or more years	1865	16.2
Unknown	646	5.6

	Mean	SD	Range	Skewness	Kurtosis
Age	29.08	7.462	18-92	.646**	.161**
Number of children	2.29	2.43	0-12	.629	-.252
Years of school completed	11.19	2.029	0-20	-.066	.964
Hours currently working/wk	6.85	13.826	0-65	1.488**	.409**
Hours currently volunteering/wk	1.75	6.324	0-60	3.265**	9.281**
# Months since last employed	220.70	34.758	0-240	-3.143[##]	11.960[##]
Perceived support – family and friends	7.91	2.265	2-10	-.906	-.175
Depression symptoms	4.48	2.731	0-9	-.192	-1.183
Anxiety symptoms	3.39	2.475	0-6	-.347	-1.543
Substance abuse symptoms	.12	.445	0-4	3.199**	9.079**
Substance dependence symptoms	.67	1.620	0-7	1.893**	2.267**

**All respondents are female.*
***Skewness and kurtosis values after square root transformations*
[##]Skewness value after square root transformation = -5.094; Kurtosis value after square root transformation=35.997

Descriptive Analyses

Study sample demographics.

Each of the variables utilized for the study were examined at the univariate level. The women in the sample are mostly white (83.2%), 41.5% have never been married, and over 70% have at least 2 children. The majority of the women did not receive KTAP (70.6%) or SSI benefits (89.7%) and did not have current paid work or volunteer work when they were interviewed. Further, the women reported overall low numbers of depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms and high perceived social support from family and friends. See Table 4.1 for descriptive statistics for all study variables.

Study variable descriptives.

Each of the variables utilized to test study hypotheses are described below. Descriptions include percent or mean, standard deviation, range, and measures of skewness and kurtosis, which are tests for normal distributions. Seven variables had skewness and/or kurtosis values over 1.00 which indicated non-normal distributions (Mertler & Vannatta, 2010). According to Mertler and Vannatta (2010), moderately skewed data can be managed by using square root transformations. These transformations help ensure that "the results of statistical analyses will be more accurate" (Mertler & Vannatta, 2010, p. 31). Thus, study variables with moderately skewed or kurtotic values were normalized with square root transformations.

Independent variables.

Education. Two measures of education were examined. The first measure was defined as the number of years of school a woman has completed. Over one quarter (26.4%) reported completing 12 years of school (GED or high school diploma), and the

average years of school completed for the sample is 11.19 (SD=2.029) with a range of 0 to 20 years. The distribution for this measure was normal (skewness = -.066, kurtosis = .964). A small number of women reported finishing enough years of post-secondary education to earn college degrees. Only 8.3% (n=959) of the women reported finishing two years of college while 1.4% (n=161) reported finishing 4 years of college and 0.4% (n=58) reported finishing 5-9 years of college. (See Table 4.1).

The second measure of education asked women to identify in what type of educational program, if any, they were currently enrolled. This measure was a categorical measure. Responses included none high school, GED, vocational school, Associate's degree, Bachelor's degree, and Master's degree. Variables were re-coded as dummy variables with 0=not enrolled in any educational activity and 1=enrolled in any educational activity. Results indicate that the majority of respondents were not enrolled in any educational activity (86.2%, n=9912). Among the 13.8% (n=1583) women who were enrolled in educational programs, 695 (10%) were enrolled in GED or high school, 506 (4.4%) were enrolled in an Associate's Degree program, 164 (1.4%) were enrolled in a Bachelor's Degree program, and only 8 (0.1%) were enrolled in Master's degree programs.

Employment. Four measures of employment were examined. The first measure was a measure of the number of hours a woman was currently working for pay. This self-reported measure ranged from 0 to 65 and had a slightly skewed distribution (skewness = 1.790, kurtosis = 1.784). After a square root transformation the distribution became more normal; however the skewness value (1.488) indicates that there is still a minor positive skew. The kurtosis value (.409) indicates a significantly more flat distribution after the square root transformation. Overall, women reported a low number of hours worked per

week with an average of 6.85 hours (SD=13.826). The large standard deviation is explained by the majority of women, 77.6% (n =8917), reporting that they were not currently working for pay. Additionally, only 2.8% (n=321) reported working 20 hours per week, and 5.5% (n=636) reported working 40 hours per week.

The second measure of employment that was examined was a woman's history of working for pay. Women reported how long it had been in months since they had last worked for pay. The mean number of months women reported since last having worked was 220.70 (SD = 34.758, Range = 0-240 months). Responses resulted in a moderately negatively skewed and moderately kurtotic distribution (skewness = -3.143, kurtosis = 11.960). After square root transformations were completed, the distribution became less normal (skewness = -5.094 kurtosis = 35.997). Because the transformed measure was less normal, the decision was made to include the non-transformed measure in the analysis.

The third measure of employment was a measure of how many hours per week women reported that they were currently volunteering their time. Nearly all of the women (91.2%, n=10,480) reported that they were not volunteering their time (Mean=1.75, SD= 6.324, Range = 0–60). However, 458 women (4.0%) reported that they were volunteering 20 hours per week and 167 women (n=1.5%) indicated that they were volunteering 30 hours per week. Due to the large number of women who reported that they were not volunteering, which accounts for the moderately sized SD, the skewness (3.988) and kurtosis (17.235) values indicated a non-normal distribution. However, once square root transformations were made, the skewness (3.265) value indicates a slightly positively skewed distribution. The kurtosis (9.281) value indicates a more flat distribution, which is a significant improvement.

The final measure of employment for this study is a categorical measure of the number of years a woman has ever spent at one job or with the same employer. Answers include less than 1 year, 1+ years, 2 to 5 years, and 5 or more years. Variables were dummy-coded with 1 = less than 1 to 1+ years, 2 = 2-5 years, 3 =5+ years. Nearly half of the women (47.4%, n=5449) reported that their longest time spent at one job was less than two years while 30.8% (n=3535) reported having spent 2 to 5 years at one job, and 16.2% (n=1865) said they had been in one job for 5 or more years. Only a few women did not know how long they had spent at one job (5.6%, n=646).

Human capital scale. This scale includes a composite measure of the combined constructs of education and employment and was utilized to determine whether a woman has more or less human capital along a continuum. Measuring this construct as a continuous factor is a unique contribution of this study as this has not been done in prior research. This study examines human capital as more or less, and not as an end in and of itself. In order to effectively combine each of the six education and employment variables into one scale to measure human capital, the five interval-level variables (i.e., all but current school enrollment, which is a dichotomous, yes/no variable) were centered. Additionally, those same five variables were standardized with z-scores prior to inclusion in the overall human capital scale which converts raw scores to a mean of zero (Healey, 2009; Mertler & Vannatta, 2010).

The standard deviation for the standardized human capital scale (which by definition has a mean of zero) is 3.097 with skewness (1.072) and kurtosis (2.300) values indicating a nearly normal distribution. The standardized scale has values ranging from -12 to 16 and allows for more effective interpretation of relationships between variables.

Control variables.

Age. For this study, age is a computed measure from participants' self-reported birth dates. The mean age of women in this sample is 29.8 years (SD=7.462) with a range of 18-92 years. Nearly half of the women (49.2%) are between the ages of 18 and 27 and only 1.1% of the women are ages 50-92. The skewness value (.979) is within acceptable limits and the kurtosis value (1.266) indicates only a minor problem with normality.

Marital status. Marital status is a categorical measure of self-reported marital status including *married, living with spouse; divorced; separated, not living with spouse; widowed, and single, never married*. For this study, marital status will be treated as a dichotomous dummy-coded variable with 0 = never married and 1 = ever married (i.e., married, living with spouse; divorced; separated, not living with spouse; and widowed). The majority of women reported that they have been married at some point (58.7%, n=6745) while 41.3% (n=4750) of the women reported never being married.

Number of children. For this study, women were asked how many children she has under the age of 18. The number of children will coded from zero to 5 or more children with 0 = zero children, 1 = one child, 2 = two children, 3 = three children, 4 = four children, and 5 = five or more children. The mean number of children women reported is 2.29 children (SD=2.43) with a range of zero to 12 children. Very few women (n=71) had no children and only 5.4% (n=1693) women reported having 4 or 5 children. The majority of women (84.7%) reported having 1 to 3 children. Both skewness (.629) and kurtosis (-.252) values indicate a normal distribution.

KTAP receipt. Whether or not a woman was receiving KTAP at the time of her interview is one of the proxy measures of income for this study. It is a dichotomous (0=no, 1=yes) measure. The majority of women reported that they were not receiving

KTAP (70.6%, n=8118) while 29.1% (n=3349) reported that they were receiving KTAP. Data for 28 women (0.2%) is missing for this variable.

SSI receipt. The second proxy measure of income for this study is whether or not a woman reported receiving SSI benefits. This measure is a dichotomous measure with 0=no and 1=yes. Only 10.3% (n=1185) women reported SSI receipt with 89.7% (n=10310) of the women reporting that they did not receive SSI at the time of their interviews.

Moderator.

Perceived social support. Perceived social support is the potential moderating variable for this study with the idea that the relationship between human capital, mental health, and substance use will be influenced by the introduction of social support into the model. Perceived social support is conceptually defined as an individual's belief that others are willing to render support, be it emotional or otherwise, when she is in need of such assistance. The literature has demonstrated that support is often perceived as being available from family and friends. For this study perceived social support is operationally defined as the answers to two questions which comprise an indicator of perceived social support.

The indicator of perceived social support is *support from friends and family* which is a composite of two questions asking how much difficulty a woman has had getting along with her friends and her family members. Possible responses are on a continuum: *None, A little, Some, Considerable*, and *Extreme*. These responses were reverse-coded with lower values indicating less perceived social support and higher values indicating more perceived social support (5= *None,* 4=*A little*, 3=*Some*, 2=*Considerable*,

1=*Extreme*). The range of responses is 2 – 10 and the mean is 7.91 (SD=2.265). Skewness (-.906) and kurtosis (-.175) values indicate a normal distribution.

Dependent variables.

Depression symptoms. For this study, depression is measured with the self-reported responses to 9 DSM-IV questions based on diagnostic criteria for major depressive disorder. Responses are dichotomous yes/no answers and were coded as 0=no, 1=yes. Responses have been summed and computed into a scale ranging from zero to 9 with zero representing no depression and 9 representing more depression. The mean response for this measure is 4.48 (SD=2.731) and responses are normally distributed with only a slight peak in the distribution (skewness=-.192, kurtosis=-1.183).

Anxiety symptoms. Anxiety will also be measured with self-reported answers to questions based on DSM-IV diagnostic criteria. There are 9 questions that assess respondents for generalized anxiety disorder. Each response is a dichotomous yes/no answer that has been coded as 0=no and 1=yes. Responses have been summed and computed into a scale ranging from zero to 9 with zero representing no anxiety and 9 representing more anxiety. The mean for this scale is 3.39 (SD=2.475). Skewness (-.347) and kurtosis (-1.543) values indicate a nearly normal distribution with a small peak in the distribution.

Substance abuse. For this study, substance abuse was measured with a scale computed from self-reported answers to DSM-IV diagnostic criteria. There are 4 dichotomous questions (0=no, 1=yes) that make up a scale that ranges from 0 to 4 with zero indicating the absence of substance abuse and 4 indicating substance abuse. Nearly all respondents (91.2%, n=10482) answered no to all substance abuse questions. The mean for this scale is 0.12 (SD=.445) and prior to square root transformations, skewness

(4.245) and kurtosis (20.317) values indicated a significantly non-normal distribution. After square root transformations, both values (skewness = 3.199, kurtosis = 9.079) indicate a more normal distribution.

Substance dependence. Substance dependence was measured with a scale computed from self-reported answers to 7 DSM-IV diagnostic criteria. Dichotomous answers were coded as 0=no and 1=yes resulting in a scale range of 0 – 7 with zero indicating an absence of substance dependence and 7 indicating substance dependence. The majority of respondents reported having no indicators of substance dependence (78.2%, n=8992) with a mean response of .67 (SD=1.620). Initial skewness (2.702) and kurtosis (6.487) values indicated a non-normal distribution; however a more normal distribution was revealed after square root transformations (skewness=1.893, kurtosis=2.267).

Summary.

These descriptive analyses were the first steps taken in preparation for bivariate and multivariate study analyses. Non-normal distributions discovered through skewness and kurtosis values during these univariate analyses were adjusted to more normal distributions utilizing square root transformations (Mertler & Vannatta, 2010). Additionally, interval-level human capital variables (i.e., education and employment variables) that were combined into an overall human capital scale were centered and standardized prior to inclusion in the scale.

Bivariate Correlations

Correlations were conducted in order to assess bivariate relationships between independent and dependent study variables. In order to examine data for possible multicollinearity, bivariate relationships between independent variables were examined

first. If independent variables are found to have multicollinearity, "practical prediction and theoretical interpretations" become problematic (Licht, 2008, p. 45), thus examining variables for multicollinearity prior to hypothesis testing is warranted. Linearity is a fundamental assumption of multiple regression analyses. Thus, bivariate correlations are important because they determine which variables are suitable for inclusion in multiple regression analyses (Healey, 2009; Mertler & Vannatta, 2010). For this study, the cut-off for significance is $p \leq .050$, which is widely used in the literature (Healey, 2009; Mertler & Vannatta, 2010).

Correlations between independent variables.

In order to determine whether multicollinearity existed among independent variables, a Pearson correlation matrix was examined. As expected, there were several correlations among independent variables. (See Table 4.2). A widely utilized rule with Pearson correlations is that correlations of $r \geq 0.70$ indicate the presence of multicollinearity (Cohen, Cohen, West, & Aiken, 2003). For the present study, significant correlations between independent variables range from -.022 to .275 indicating the absence of multicollinearity. Therefore, all human capital variables will be included in subsequent multivariate study analyses.

Table 4.2 *Pearson Correlation Coefficients among Human Capital Variables*

	Years School	Enrolled School	Current Emplymt	Months Since Last Emplyd	Volunteer Work	Longest Time At One Job
Years School	---	.030***	.103***	.068***	.022*	.260***
Enrolled School		---	.005	.088***	.141***	-.013
Current Employment			---	.275***	-.102***	.184***
Months Since Last Employed				---	.023**	.002
Volunteer Work					---	-.004
Longest Time At One Job						---

**p≤.05, **p≤.01, ***p≤.001*

Human capital variable correlations. As expected, several correlations among human capital variables were significant. Table 4.2 presents human capital correlation coefficients. The number of years of school a woman has completed was positively correlated with each of the other human capital variables. Only three correlations among human capital variables were not significant: longest time spent at one job was not correlated with previous paid work or volunteer work, and current work was not correlated with current enrollment in an educational activity. All human capital variables will remain in the analysis and will be utilized to test study hypothesis due to low ($r < .70$) Pearson correlation coefficients which indicates that multicollinearity does not exist among these variables.

Pearson correlations of $r = .30$ are considered to be moderate correlations (Cohen, Cohen, West, & Aiken, 2003). Each of the significant correlations between study variables are low, ranging from .022 to .275. This is an indication that these variables

may not demonstrate significant relationships when the study hypotheses are tested with OLS regression analyses. However, the large sample size (N=11,495) allowed each of the variables to remain in the analysis in order to test study hypothesis models.

Correlations among dependent variables.

Each of the dependent variables was significantly correlated with one another. (See Table 4.3). The most highly correlated measures were, as expected, the depression symptoms scale and the anxiety symptoms scale (r=.746, p=.000).

Table 4.3 *Pearson Correlation Coefficients among Dependent Variables*

	Depression Symptoms Scale	**Anxiety Symptoms Scale**	**Substance Abuse Symptoms Scale**	**Substance Dependence Symptoms Scale**
Depression Symptoms Scale	---	.746***	.038***	.206***
Anxiety Symptoms Scale		---	.025**	.172***
Substance Abuse Symptoms Scale			---	.030***
Substance Dependence Symptoms Scale				---

***p≤.01, ***p≤.001*

It has been widely documented that depression and anxiety are likely to co-occur among low-income women (e.g., Belle, 1990; Brown, Bhrolcháin, & Harris, 1975; Coiro, 2001; Dohrenwend et al., 1992; Kahn, Wise, Kennedy, & Kawachi, 2000). However, that finding does not indicate that removing one of the symptoms scales from the analysis will be useful. It does indicate that the constructs are measuring two related dimensions. Other correlations are low to moderate in strength indicating that the variables may not be significant in hypothesis testing models. (See Table 4.2). It is interesting to note that the

substance abuse symptoms scale and the substance dependence scales have a low-level correlation (r=.030, p=.001).

Summary.

Bivariate correlation analyses have demonstrated that the variables, which have been transformed using square root transformations and standardized with z-scores, meet assumptions for linearity and normality. Specifically, none of the independent variables are highly correlated with one another, which demonstrates that there is an absence of multicollinearity among the variables. Each of the correlations, among independent and dependent study variables are low which is an early indication that study hypotheses may not demonstrate significant relationships among study variables. Despite low correlation coefficients, each of the study variables will be utilized for subsequent hypothesis testing.

Hypothesis Testing

Each of the study variables has been examined at the univariate and bivariate level. Variables that demonstrated non-normal distributions were transformed using square root transformations so that distributions became more normal. Additionally, some study variables were centered and standardized using z-scores in order to strengthen the ability to interpret results of hypothesis tests.

For each of the five study hypotheses, several sub-hypotheses will be examined. By testing multiple sub-hypotheses, each study hypothesis will be more fully addressed. Each sub-hypothesis will be tested with an OLS regression model. Decisions about the significance of each of the resulting model statistics will be based on the widely used cut-off of $p \leq .050$ (Healey, 2009; Mertler & Vannatta, 2010).

Hypothesis 1.

Hypothesis 1: Adjusting for control variables, greater overall human capital is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women. Hypothesis 1 was tested by examining 4 sub-hypothesis with OLS regression models in order to determine the amount of variance in the dependent variables, depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms that was accounted for by the independent variable, human capital. For each sub-hypothesis model that was tested, control variables were entered in the first step and independent variables were entered in the second step. Results of each sub-hypothesis test are presented in tables 4.4, 4.5, 4.6, and 4.7.

Sub-hypothesis 1A: Adjusting for control variables, greater overall human capital is associated with fewer depression symptoms among low-income women. The model testing this sub-hypothesis was significant ($F=90.508$, $p=.000$) with overall human capital accounting for 4.5% in depression symptoms ($R^2=.045$). (See Table 4.4 for overall model results.) The R^2 change from step 1 to step 2 was minor (R^2 change = .001) which indicates that control variables account for the majority of the variance in overall human capital. Being older was a significant predictor of having more depressive symptoms ($\beta=.092$, $p=.000$), receiving KTAP was a significant indicator of having more depressive symptoms ($\beta=.200$, $p=.000$), and having greater overall human capital was indicative of fewer depressive symptoms ($\beta= -.034$, $p=.001$).

Table 4.4 *Regression Analysis Summary for Overall Human Capital and Depression Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.378	.041	.092	9.195	.000
Marital Status	.038	.055	.007	.696	.486
Number of Children	-.019	.022	-.008	-.839	.401
KTAP Receipt	1.201	.057	.200	21.140	.000
SSI Receipt	-.157	.087	-.018	-1.815	.070
Overall Human Capital	-.030	.009	-.034	-3.463	.000
R^2= .045					

Table 4.5 *Regression Analysis Summary for Overall Human Capital and Anxiety Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.262	.037	.071	7.071	.000
Marital Status	-.076	.050	-.015	-1.522	.128
Number of Children	-.019	.020	-.009	-.958	.338
KTAP Receipt	.974	.051	.180	18.986	.000
SSI Receipt	-.158	.078	-.020	-2.071	.044
Overall Human Capital	-.015	.008	-.019	-1.908	.056
R^2= .037					

Sub-hypothesis 1B: Adjusting for control variables, greater overall human capital is associated with fewer anxiety symptoms among low-income women. The regression model testing this sub-hypothesis was also significant (F=72.782, p=.000) with overall human capital accounting for 3.7% of the variance in anxiety symptoms (R^2=.037). (See Table 4.5.) However, this was only a slight change in R^2 from the first step to the second step in the model (R^2 change = .001) which indicates that the majority of the variance in overall human capital was accounted for by control variables. Overall human capital was not significantly related to anxiety symptoms (β= -.019, p=.056), but being older was a significant indicator of more anxiety symptoms (β=.071, p=.000), KTAP receipt was a

significant predictor of more anxiety symptoms (β=.180, p=.000), and SSI receipt was also a significant indicator of more anxiety (β=-.020, p=.044).

Table 4.6 *Regression Analysis Summary for Overall Human Capital and Substance Abuse Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.002	.005	.004	.345	.730
Marital Status	.003	.007	.005	.458	.647
Number of Children	-.003	.003	-.011	-1.199	.231
KTAP Receipt	-.071	.007	-.095	-9.908	.000
SSI Receipt	-.011	.011	-.010	-1.045	.296
Overall Human Capital	-.002	.001	-.018	-1.812	.070

R^2= .010

Sub-hypothesis 1C states that adjusting for control variables; greater overall human capital is associated with fewer substance abuse problems among low-income women. The regression model examined for this sub-hypothesis was significant as well (F=19.134, p=.000). However, this result, while significant, has an extremely low R^2 value of only .010, indicating that its significance is inconsequential. Only 1.0% of the variance in substance abuse symptoms is accounted for by overall human capital. It is interesting to note that the only individual variable that is significant in the model is KTAP receipt (β=-.095, p=.000). Not receiving KTAP is indicative of more substance abuse symptoms. Overall human capital was not significantly related to substance abuse in this model (β=-.018, p=.070). (See Table 4.6.)

Sub-hypothesis 1D, adjusting for control variables, greater overall human capital is associated with fewer substance dependence problems among low-income women, was significant in an OLS regression model (F=23.865, p=.000) and also had a very low R^2 value of .012. This result indicates that the significance of the model is trivial in that only 1.2% of the variance in substance dependence symptoms is explained by overall human

capital. (See Table 4.7.) The R^2 change was slight, at .002. Four variables in Model 4 were significant. Ever having been married was predictive of more substance dependence symptoms (β=.031, p=.002), not receiving KTAP was indicative of more substance dependence symptoms (β= -.083, p=.000), non-receipt of SSI was an indicator of more substance dependence symptoms (β= -.026, p=.009), and less overall human capital was predictive of more substance dependence symptoms (β=-.052, p=.000).

Table 4.7 *Regression Analysis Summary for Overall Human Capital and Substance Dependence Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	-.011	.011	-.010	-.961	.337
Marital Status	.046	.015	.031	3.601	.002
Number of Children	-.009	.006	-.014	-1.513	.130
KTAP Receipt	-.135	.016	-.083	-8.659	.000
SSI Receipt	-.063	.024	-.026	-2.629	.009
Overall Human Capital	-.012	.002	-.052	-5.203	.000

R^2 = .012

Summary of Hypothesis 1 results.

Overall human capital is a significant predictor of depression and substance dependence symptoms. However, overall human capital is not significant for anxiety and substance abuse symptoms.

Hypothesis 2.

Hypothesis 2: Greater educational achievement is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. OLS regression models were tested by regressing the dependent variables, depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms on the human capital education variables, years of school, and current school

enrollment. To test each of the sub-hypotheses in OLS regression models, all control variables: age, marital status, number of children, KTAP receipt, and SSI receipt were entered in the first step and independent variables were entered in the second step.

Table 4.8 *Regression Analysis Summary for Years of School Completed and Depression Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.393	.041	.096	9.524	.000
Marital Status	.041	.055	.007	.738	.461
Number of Children	-.028	.022	-.012	-1.234	.217
KTAP Receipt	1.143	.055	.190	20.626	.000
SSI Receipt	-.124	.084	-.014	-1.467	.142
Years of School Completed	-.064	.013	-.047	-5.075	.000

$R^2 = .046$

Sub-hypothesis 2A states that years of school completed is associated with fewer depression symptoms among low-income women when adjusted for control variables. The model testing this sub-hypothesis, in which depression symptoms was regressed on years of school completed, was significant (F=92.593, p=.000) with 4.6% of the variance in depression symptoms accounted for by the independent variables (R^2=.046). (See Table 4.8.) The R^2 change, however, was only .002, indicating that the majority of the variance in the dependent variable, years of school completed, was accounted for by the control variables. Three individual variables were significant at the p =.000 level. Being older was predictive of more depression symptoms (β=.096, p=.000), KTAP receipt was indicative of more depression symptoms (β=.190, p=.000), and having completed fewer years of school was predictive of more depression symptoms (β= -.047, p=.000).

Sub-hypothesis 2B states: Years of school completed is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. The model that tested this sub-hypothesis, which regressed anxiety symptoms on years of

school completed, was also significant (F=75.273, p=.000). Independent variables accounted for 3.8% of the variance in anxiety symptoms (R^2=.038). (See Table 4.9.) The R^2 change was very small, signifying that control variables accounted for most of the variance in anxiety symptoms in this model (R^2 change = .002). Four variables, including years of school completed, were significant in the model. Older age was indicative of more anxiety symptoms (β=.075, p=.000), KTAP receipt (β=.174, p=.000) was predictive of more anxiety symptoms, while not receiving SSI was indicative of more anxiety symptoms (β=-.019, p=.047), and having completed fewer years of school was predictive of more anxiety symptoms (β=-.042, p=.000).

Table 4.9 *Regression Analysis Summary for Years of School Completed and Anxiety Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.277	.037	.075	7.430	.000
Marital Status	-.075	.050	-.015	-1.507	.132
Number of Children	-.029	.020	-.013	-1.427	.154
KTAP Receipt	.942	.050	.174	18.813	.000
SSI Receipt	-.151	.076	-.019	-1.989	.047
Years of School Completed	-.051	.011	-.042	-4.440	.000

R^2 = .038

Sub-hypothesis 2C states that years of school completed is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. The model that tested this sub-hypothesis was also significant (F=18.696, p=.000), however independent variables accounted for only 1.0% of the variance in substance abuse symptoms (R^2=.010) and the R^2 change = .000. The R^2 change statistic indicates that only control variables accounted for the variance in substance abuse symptoms. Specifically, only KTAP receipt was significant in the model (β= -.099,

p=.000) in that non-receipt of KTAP is predictive of more substance abuse symptoms. See Table 4.10 for a summary of the overall model statistics.

Table 4.10 *Regression Analysis Summary for Years of School Completed and Substance Abuse Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	.001	.005	.002	.188	.851
Marital Status	.003	.007	.005	.476	.634
Number of Children	-.003	.003	-.011	-1.169	.243
KTAP Receipt	-.074	.007	-.099	-10.585	.000
SSI Receipt	-.007	.011	-.006	-.660	.509
Years of School Completed	-.001	.002	-.005	-.490	.624

$R^2 = .038$

Table 4.11 *Regression Analysis Summary for Years of School Completed and Substance Dependence Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	-.015	.011	-.014	-1.336	.181
Marital Status	.045	.015	.030	3.002	.003
Number of Children	-.008	.006	-.012	-1.264	.206
KTAP Receipt	-.153	.015	-.095	-10.056	.000
SSI Receipt	-.034	.023	-.014	-1.484	.138
Years of School Completed	-.004	.003	-.012	-1.230	.219

$R^2 = .010$

Sub-hypothesis 2D, years of school completed is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables, which was tested with an OLS regression model, was significant (F=19.548, p=.000), but again the independent variables accounted for only 1.0% of the variance in substance dependence (R^2=.010) and the R^2 change statistic (.000) indicates again that control variables account for all of the variance in the dependent variable. Specifically, ever having been married was predictive of more substance dependence symptoms (β=.030, p=.003) and non-receipt of KTAP was indicative of more substance dependence

symptoms (β= -.095, p=.000). Years of school completed was not a significant predictor in this model. (See Table 4.11.)

Table 4.12 *Regression Analysis Summary for Current Educational Program Enrollment and Depression Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.355	.041	.087	8.677	.000
Marital Status	.039	.055	.007	.704	.481
Number of Children	-.012	.022	-.005	-.562	.574
KTAP Receipt	1.169	.056	.195	20.839	.000
SSI Receipt	-.080	.084	-.009	-.957	.339
Current Educational Program Enrollment	-.105	.074	-.013	-1.427	.154

R^2 = .044

Sub-hypothesis 2E states that current educational program enrollment is associated with fewer depression symptoms among low-income women when adjusted for control variables. The model, in which depressive symptoms were regressed on current educational enrollment, was significant (F=88.457, p=.000) and 4.4% of the variance in depressive symptoms was accounted for by the independent variables (R^2=.044). The R^2 change statistic (.000) indicates that the full 4.4% of variance in the dependent variable was accounted for by control variables, which were entered in the first step of the model. Specifically, older age is indicative of more depressive symptoms (β=.087, p=.000) and KTAP receipt is predictive of more depressive symptoms (β=.195, p=.000). Current enrollment in an educational program was not significant in the model (β=-.013, p=.154). (See Table 4.12.)

Sub-hypothesis 2F which states that current educational program enrollment is associated with fewer anxiety symptoms among low-income women when adjusted for control variables was tested with an OLS regression model and found to be significant

(F=72.144, p=.000). Independent variables accounted for 3.6% of the variance in anxiety symptoms (R^2=.036). The change in R^2 values from step 1 to step 2 in the model indicates again that the independent variable, current educational program enrollment, did not account for any of the variance in the dependent variable (R^2 change=.000). As was the case with Model 5, older age (β=.067, p=.000) and KTAP receipt (β=.178, p=.000) were indicative of more anxiety symptoms and current enrollment in an educational program was not predictive of anxiety symptoms (β=-.012, p=.204). (See Table 4.13.)

Table 4.13 *Regression Analysis Summary for Current Educational Program Enrollment and Anxiety Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.247	.037	.067	6.681	.000
Marital Status	-.076	.050	-.015	-1.534	.125
Number of Children	-.017	.020	-.008	-.842	.400
KTAP Receipt	.962	.051	.178	18.998	.000
SSI Receipt	-.117	.076	-.014	-1.547	.122
Current Educational Program Enrollment	-.085	.067	-.012	-1.271	.204

R^2 = .044

Table 4.14 *Regression Analysis Summary for Current Educational Program Enrollment and Substance Abuse Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.000	.005	-.001	-.081	.935
Marital Status	.004	.007	.005	.524	.600
Number of Children	-.003	.003	-.011	-1.150	.250
KTAP Receipt	-.071	.007	-.096	-10.087	.000
SSI Receipt	-.007	.-11	-.007	-.712	.476
Current Educational Program Enrollment	-.022	.009	-.023	-2.372	.018

R^2 = .010

Sub-hypothesis 2G states: Current educational program enrollment is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. The OLS regression model testing this sub-hypothesis was also

significant (F=19.602, p=.000). Independent variables accounted for only 1.0% of the variance in substance abuse symptoms (R^2=.010) and the R^2 change statistic was very small (.001). Non-receipt of KTAP was indicative of more substance abuse symptoms (β=-.096, p=.000) and not being currently enrolled in an educational activity was predictive of more substance abuse symptoms (β=-.023, p=.018). (See Table 4.14.)

Sub-hypothesis 2H states that current educational program enrollment is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. The model examining this sub-hypothesis was also found to be significant (F=24.227, p=.000) with 1.3% of the variance in the dependent variable, substance dependence symptoms, accounted for by the independent variables (R^2=.013). The R^2 change statistic is small at .003. Specifically, older age is predictive of more substance dependence symptoms (β=-.020, p=.047), ever having been married is predictive of more substance dependence symptoms (β=.031, p=.002), not receiving KTAP is indicative of more substance dependence symptoms (β=-.086, p=.000), and not being enrolled in an educational program is indicative of more substance dependence symptoms (β=-.051, p=.000). (See Table 4.15.)

Table 4.15 *Regression Analysis Summary for Current Educational Program Enrollment and Substance Dependence Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	-.022	.011	-.020	-1.988	.047
Marital Status	.047	.015	.031	3.114	.002
Number of Children	-.007	.006	-.011	-1.193	.233
KTAP Receipt	-.139	.015	-.086	-9.073	.000
SSI Receipt	-.037	.023	-.015	-1.592	.111
Current Educational Program Enrollment	-.110	.020	-.051	-5.413	.000

R^2 = .013

Summary of Hypothesis 2 results.

Years of school completed is a significant indicator of depression symptoms and anxiety symptoms while current educational program enrollment is significantly predictive of substance abuse and substance dependence symptoms.

Hypothesis 3.

Hypothesis 3 states that a history of regular employment is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. OLS regression models were tested by regressing the dependent variables, depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms on the human capital employment variables, current work, number of months it has been since last employment, current volunteer work (i.e., work without pay), and length of time spent at one job to address the 16 sub-hypotheses related to Hypothesis 3. For each of the sub-hypothesis tests which utilized OLS regression models, all control variables: age, marital status, number of children, KTAP receipt, and SSI receipt were entered in the first step and independent variables were entered in the second step.

Sub-hypothesis 3A states that current employment is associated with fewer depression symptoms among low-income women when adjusted for control variables. The OLS regression model, in which depression symptoms was regressed on current employment, was significant ($F=110.325$, $p=.000$) with independent variables accounting for 5.5% of the variance in depression symptoms ($R^2=.055$). (See Table 4.16.) The R^2 change statistic was small (.011) but does indicate that the addition of the independent variable in step 2 of the model did increase the amount of variance accounted for in the dependent variable. Being older was predictive of more depression symptoms ($\beta=.093$,

p=.000). KTAP receipt (β=.173, p=.000) and non-receipt of SSI (β=-.027, p=.005) were also indicative of more depression symptoms. Additionally, not currently working was also predictive of more depression symptoms (β=-.106, p=.000).

Table 4.16 *Regression Analysis Summary for Current Work and Depression Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.379	.041	.093	9.341	.000
Marital Status	.047	.055	.008	.856	.392
Number of Children	-.012	.022	-.005	-.532	.595
KTAP Receipt	1.037	.056	.173	18.473	.000
SSI Receipt	-.240	.085	-.027	-2.837	.005
Current Employment	-.021	.002	-.106	-11.290	.000

$R^2 = .055$

Table 4.17 *Regression Analysis Summary for Current Work and Anxiety Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.266	.037	.072	7.240	.000
Marital Status	-.070	.049	-.014	-1.413	.158
Number of Children	-.016	.020	-.008	-.817	.414
KTAP Receipt	.859	.051	.159	16.928	.000
SSI Receipt	-.241	.076	-.030	-3.156	.002
Current Employment	-.016	.002	-.092	-9.718	.000

$R^2 = .044$

Sub-hypothesis 3B states that current employment is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. The OLS regression model testing this sub-hypothesis was also significant (F=88.198, p=.000). Independent variables accounted for 4.4% of the variance in anxiety symptoms (R^2=.044) and the R^2 change from step 1 of the model to step 2 of the model was small at .008. Being older was indicative of more anxiety symptoms (β=.072, p=.000), receiving KTAP was also indicative of more anxiety symptoms (β=.159, p=.000), and not receiving SSI was indicative of more anxiety symptoms (β=-.030, p=.002). In addition, not

currently working was also predictive of more anxiety symptoms (β=-.092, p=.000). (See Table 4.17.)

Sub-hypothesis 3C states that that current employment is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. When this model was tested with OLS regression, it was significant (F=20.746, p=.000), but only 1.1% of the variance in substance abuse symptoms was accounted for by the independent variables (R^2=.010). The R^2 change statistic (.001) is also very small. Two variables account for the variance in the dependent variable. Non-receipt of KTAP is indicative of more substance abuse symptoms (β=-.106, p=.000) and not currently working is also indicative of more substance abuse symptoms (β=-.034, p=.000). (See Table 4.18.)

Table 4.18 *Regression Analysis Summary for Current Work and Substance Abuse Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.001	.005	.003	.262	.794
Marital Status	.004	.007	.005	.527	.598
Number of Children	-.003	.003	-.010	-1.109	.267
KTAP Receipt	-.078	.007	-.106	-11.054	.000
SSI Receipt	-.013	.011	-.012	-1.208	.227
Current Employment	-.001	.000	-.034	-3.524	.000

R^2 = .011

Sub-hypothesis 3D states: Current employment is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. When tested with an OLS regression model, it was also significant (F=36.926, p=.000) and 1.9% of the variance in substance dependence symptoms was accounted for by the independent variables (R^2=.019). (See Table 4.19.) The change in R^2 values from step 1 to step 2 was slight (R^2 change = .009). Four independent variables contributed to the

variance in substance dependence systems. Specifically, ever having been married was indicative of more substance dependence symptoms (β=.032, p=.002), non-receipt of KTAP was predictive of more substance dependence symptoms (β= -.112, p=.000), non-receipt of SSI was predictive of more substance dependence symptoms (β= -.030, p=.002), and not currently working was indicative of more substance dependence symptoms (β= -.098, p=.000).

Table 4.19 *Regression Analysis Summary for Current Work and Substance Dependence Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	-.013	.011	-.011	-1.123	.262
Marital Status	.048	.015	.032	3.164	.002
Number of Children	-.007	.006	-.010	-1.102	.271
KTAP Receipt	-.182	.015	-.112	-11.805	.000
SSI Receipt	-.072	.023	-.030	-3.107	.002
Current Employment	-.005	.001	-.098	-10.234	.000

R^2 = .019

Sub-hypothesis 3E states that the number of months it has been since last employment is associated with fewer depression symptoms among low-income women when adjusted for control variables. The model, in which depression symptoms was regressed on the number of months it has been since last employment, was significant (F=88.518, p=.000) and 4.4% of the variance in depression symptoms was accounted for by the independent variables. The R^2 change was .000, indicating that only control variables account for the variance in depression symptoms. Being older is predictive of more depression symptoms (β=.085, p=.000) and KTAP receipt is predictive of more depression symptoms (β=.192, p=.000). The number of months it has been since last employment was not a significant predictor of depression symptoms in this model. (See Table 4.20.)

Table 4.20 *Regression Analysis Summary for Number of Months Since Last Employed and Depression Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	.346	.042	.085	8.280	.000
Marital Status	.040	.055	.007	.719	.472
Number of Children	-.012	.022	-.005	-.553	.580
KTAP Receipt	1.154	.055	.192	20.825	.000
SSI Receipt	-.121	.089	-.013	-1.359	.174
Number of Months Since Last Employed	-.001	.001	-.016	-1.545	.122

$R^2 = .044$

Table 4.21 *Regression Analysis Summary for Number of Months Since Last Employed and Anxiety Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	.241	.038	.066	6.390	.000
Marital Status	-.076	.050	-.015	-1.526	.127
Number of Children	-.017	.020	-.008	-.833	.405
KTAP Receipt	.951	.050	.176	18.995	.000
SSI Receipt	-.145	.080	-.018	-1.802	.072
Number of Months Since Last Employed	-.001	.001	-.012	-1.183	.237

$R^2 = .036$

Sub-hypothesis 3F states that the number of months it has been since last employment is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. This sub-hypothesis was tested with an OLS regression model which was also significant (F=72.106, p=.000) with 3.6% of the variance in anxiety symptoms accounted for by the independent variables (R^2=.036). From step 1 of the model to step 2 of the model, the R^2 statistic did not change (R^2 change = .000) which is an indication that control variables accounted for all of the variance in the dependent variable. Being older was indicative of more anxiety symptoms (β=.066, p=.000) as was KTAP receipt (β=.176, p=.000). The number of months it has been since last employment was not a significant predictor in this model (See Table 4.21.)

Sub-hypothesis 3G states: The number of months it has been since last employment is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. The model resulting from OLS regression analysis testing this sub-hypothesis was significant (F=19.140, p=.000) with only 1.0% of the variance in substance abuse symptoms accounted for by the independent variables in the model. With an unchanged R^2 statistic (R^2 change = .000) from step 1 to step 2, the model indicates that control variables account for the variance in the dependent variable. Specifically, only one control variable is significant in the model. Non-receipt of KTAP is predictive of more substance abuse symptoms (β=-.100, p=.000). The independent variable, number of months it has been since last employment, was not a significant predictor of substance abuse symptoms. (See Table 4.22.)

Table 4.22 *Regression Analysis Summary for Number of Months Since Last Employed and Substance Abuse Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	-.001	.005	-.003	-.257	.797
Marital Status	.004	.007	.005	.523	.601
Number of Children	-.003	.003	-.011	-1.128	.259
KTAP Receipt	-.074	.007	-.100	-10.611	.000
SSI Receipt	-.013	.011	-.011	-1.139	.255
Number of Months Since Last Employed	.000	.000	-.017	1.698	.090

R^2 = .036

Sub-hypothesis 3H states that the number of months it has been since last employment is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. This sub-hypothesis was tested with an OLS regression model in which substance dependence symptoms was regressed on the number of months it has been since last employment, and was significant (F=21.525, p=.000) with 1.1% of the variance in substance dependence symptoms accounted for by

the independent variables (R^2=.011). The R^2 change from is very small, at .001. Five variables accounted for the variance in substance dependence symptoms in the model. Specifically, being older is indicative of fewer substance dependence symptoms (β= -.024, p=.021), ever having been married is indicative of more substance dependence symptoms (β=.031, p=.002), non-receipt of KTAP is indicative of more substance dependence symptoms (β= -.095, p=.000), non-receipt of SSI is indicative of more substance dependence symptoms (β= -.025, p=.013), and a greater number of months since last employment is also indicative of fewer substance dependence symptoms (β= -.037, p=.000). (See Table 4.23.)

Table 4.23 *Regression Analysis Summary for Number of Months Since Last Employed and Substance Dependence Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	-.026	.011	-.024	-2.302	.021
Marital Status	.047	.015	.031	3.101	.002
Number of Children	-.007	.006	-.011	-1.140	.254
KTAP Receipt	-.154	.015	-.095	-10.098	.000
SSI Receipt	-.061	.024	-.025	-2.490	.013
Number of Months Since Last Employed	-.001	.000	-.037	-3.641	.000

R^2 = .011

Sub-hypothesis 3I states that volunteer work without pay is associated with fewer depression symptoms among low-income women when adjusted for control variables. This sub-hypothesis was tested with an OLS regression model in which depression symptoms was regressed on volunteer work without pay and was significant (F=88.562, p=.000). The model showed that 4.4% of the variance in depression symptoms was accounted for by the independent variables. The R^2 statistic remained static from step 1 to step 2 of the model (R^2 change = .000) which is an indication that control variables

account for all of the variance in depression symptoms in the model. Being older (β=.089, p=.000) and receiving KTAP (β=.195, p=.000) are predictive of more depression symptoms. Volunteer work without pay is not a significant predictor of depression symptoms in this model (β= -.019, p=.361). (See Table 4.24.)

Table 4.24 *Regression Analysis Summary for Volunteer Work Without Pay and Depression Symptoms*

Overall Model **Predictor Variable**	**B**	**SE B**	**β**	***t***	***p***
Age	.363	.041	.089	8.880	.000
Marital Status	.036	.055	.006	.645	.519
Number of Children	-.013	.022	-.005	-.573	.567
KTAP Receipt	1.174	.058	.195	20.111	.000
SSI Receipt	-.084	.084	-.009	-1.002	.317
Volunteer Work Without Pay	-.019	.021	-.009	-.913	.361

R^2 = .044

Table 4.25 *Regression Analysis Summary for Volunteer Work Without Pay and Anxiety Symptoms*

Overall Model **Predictor Variable**	**B**	**SE B**	**β**	***t***	***p***
Age	.254	.037	.069	6.899	.000
Marital Status	-.076	.050	-.015	-1.526	.127
Number of Children	-.016	.020	-.007	-.791	.429
KTAP Receipt	.940	.053	.174	17.830	.000
SSI Receipt	-.116	.076	-.014	-1.536	.125
Volunteer Work Without Pay	.014	.019	.007	.751	.453

R^2 = .037

Sub-hypothesis 3J states: Volunteer work without pay is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. The sub-hypothesis was tested with an OLS regression model and was found to be significant (F=72.250, p=.000) with 3.7% of the variance in anxiety symptoms accounted for by the independent variables in the model (R^2=.-37). The R^2 statistic is unchanged from step 1 to

step 2 in the model which is an indication that control variables account for the variance in the dependent variable. Being older is predictive of more anxiety symptoms (β=.069, p=.000) and receiving KTAP is also predictive of more anxiety symptoms (β=.174, p=.000), but volunteer work without pay is not a significant predictor of anxiety symptoms (β=.007, p-.453). (See Table 4.25.)

Sub-hypothesis 3K states that volunteer work without pay is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. This sub-hypothesis was tested with an OLS regression model and is also significant (F=18.971, p=.000) with just 1.0% of the variance in substance abuse symptoms accounted for by independent variables (R^2=.010). The value of R^2 does not change from step 1 to step 2 of the model (R^2 change = .000) which indicates that control variables account for all of the variance in the dependent variable. Specifically, one variable accounts for the variance in substance abuse symptoms. Non-receipt of KTAP is indicative of more substance abuse symptoms (β= - 094, p=.000). Volunteer work without pay is not a significant predictor of substance abuse symptoms in this model (β= -.015, p=.128). (See Table 4.26.)

Table 4.26 *Regression Analysis Summary for Volunteer Work Without Pay and Substance Abuse Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.001	.005	.002	.167	.868
Marital Status	.003	.007	.004	.412	.680
Number of Children	-.003	.003	-.010	-1.080	.280
KTAP Receipt	-.070	.007	-.094	-9.546	.000
SSI Receipt	-.007	.011	-.006	-.679	.497
Volunteer Work Without Pay	-.004	.003	-.015	-1.520	.128

R^2 = .010

Sub-hypothesis 3L states that volunteer work without pay is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. The sub-hypothesis was tested with an OLS regression model and was found to be significant (F=20.415, p=.000) but the R^2 statistic (R^2=.010) indicates that only 1.0% of the variance in substance dependence is accounted for by the independent variables in the model and the R^2 change statistic is very small (R^2 change = .001). Three variables account for the variance in substance dependence in the model. Ever having been married is predictive of more substance dependence symptoms (β=.030, p=.003), non-receipt of KTAP is also predictive of more substance dependence symptoms (β= -.086, p=.000), and no involvement with volunteer work without pay is predictive of more substance dependence symptoms (β= -.025, p=.010). (See Table 4.27.)

Table 4.27 *Regression Analysis Summary for Volunteer Work Without Pay and Substance Dependence Symptoms*

Overall Model **Predictor Variable**	**B**	**SE B**	**β**	***t***	***p***
Age	-.017	.011	-.015	-1.499	.134
Marital Status	.045	.015	.030	2.960	.003
Number of Children	-.007	.006	-.011	-1.133	.257
KTAP Receipt	-.140	.016	-.086	-9.711	.000
SSI Receipt	-.034	.023	-.014	-1.466	.143
Volunteer Work Without Pay	-.015	.006	-.025	-2.566	.010

R^2 = .010

Table 4.28 *Regression Analysis Summary for Length of Time Spent at One Job and Depression Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	.375	.045	.092	8.304	.000
Marital Status	.037	.055	.007	.670	.503
Number of Children	-.013	.022	-.055	-.577	.564
KTAP Receipt	1.153	.056	.192	20.754	.000
SSI Receipt	-.089	.086	-.010	-1.039	.299
Length of Time at One Job	-.026	.034	-.008	-.766	.444

$R^2 = .044$

Sub-hypothesis 3M states that length of time at one job is associated with fewer depression symptoms among low-income women when adjusted for control variables. An OLS regression model in which depression symptoms were regressed on the length of time spent at one job to test the sub-hypothesis, was significant (F=88.204, p=.000) and 4.4% of the variance in depression symptoms were accounted for by the independent variables. The R^2 change statistic is .000 which indicates that only control variables account for the variance in the dependent variable, depression symptoms. Specifically, being older is indicative of more depression symptoms (β=.092, p=.000) as is receiving KTAP (β=.192, p=.000). The independent variable in this model, length of time spent at one job, was not a significant predictor of the dependent variable, depression symptoms (β=-.008, p=.444). (See Table 4.28.)

Table 4.29 *Regression Analysis Summary for Longest Time Spent at One Job and Anxiety Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	.260	.041	.071	6.370	.000
Marital Status	-.078	.050	-.016	-1.564	.118
Number of Children	-.017	.020	-.008	-.847	.397
KTAP Receipt	.951	.050	.176	18.939	.000
SSI Receipt	-.121	.077	-.015	-1.566	.117
Length of Time at One Job	-.016	.031	-.005	-.505	.614

$R^2 = .036$

Sub-hypothesis 3N states: Length of time at one job is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. This sub-hypothesis, tested with an OLS regression model, was significant (F=71.909, p=.000) and 3.6% of the variance in anxiety symptoms was accounted for by independent variables (R^2=.036). The R^2 value remains constant from step 1 to step 2 of the model (R^2 change = .000) and indicates that control variables account for all of the variance in anxiety symptoms. Being older (β=.071, p=.000) and KTAP receipt (β=.176, p=.000) are predictive of more anxiety symptoms while length of time spent at one job is not predictive of anxiety symptoms (β=-.005, p=.614). (See Table 4.29.)

Sub-hypothesis 3O states: Length of time at one job is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. The OLS regression model used to test this sub-hypothesis was significant (F=19.555, p=.000), but the R^2 value (.010) indicates that only 1.0% of the variance in substance abuse symptoms is explained by independent variables, and the R^2 change statistic (.001) is very small. Two independent variables were significant in the model. Not receiving KTAP was predictive of more substance abuse symptoms (β=-.098, p=.000) and more time spent at one job was predictive of more substance abuse symptoms (β=.024, p=.021). (See Table 4.30.)

Table 4.30 *Regression Analysis Summary for Longest Time Spent at One Job and Substance Abuse Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	-.005	.006	-.010	-.886	.376
Marital Status	.003	.007	.005	.473	.636
Number of Children	-.003	.003	-.009	-.992	.321
KTAP Receipt	-.072	.007	-.098	-10.378	.000
SSI Receipt	-.001	.011	-.001	-.091	.927
Length of Time at One Job	.010	.004	.024	2.312	.021

$R^2 = .010$

Sub-hypothesis 3P states that length of time at one job is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. The OLS regression model used to test this subhypothesis was significant (F=19.314, p=.000) but the R^2 value was very small and indicates that only 0.9% of the variance in substance dependence symptoms was accounted for by independent variables (R^2=.009) and the R^2 change statistic (.000) indicates that control variables account for that variance. Being older (β=.030, p=.003) and not receiving KTAP (β=-.094, p=.000) are predictive of more substance dependence symptoms but the independent variable for the model, length of time at one job is not predictive of substance dependence symptoms (β=-.004, p=.722). (See Table 4.31).

Table 4.31 *Regression Analysis Summary for Longest Time Spent at One Job and Substance Dependence Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	-.015	.012	-.014	-1.250	.211
Marital Status	.045	.015	.030	2.986	.003
Number of Children	-.007	.006	-.011	-1.122	.262
KTAP Receipt	-.153	.015	-.094	-10.008	.000
SSI Receipt	-.033	.024	-.014	-1.397	.162
Length of Time at One Job	-.003	.009	-.004	-.356	.722

$R^2 = .009$

Summary of Hypothesis 3 results.

Current employment is a significant predictor of depression and anxiety symptoms as well as substance abuse and substance dependence symptoms. None of the other employment measures were found to be significant.

Hypothesis 4.

Hypothesis 4 states that perceived social support is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. OLS regression models were tested by regressing the dependent variables, depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms on perceived social support support from family and friends In order to fully examine Hypothesis 4, eight sub-hypotheses were tested using OLS regression models. For each model, all control variables: age, marital status, number of children, KTAP receipt, and SSI receipt were entered in the first step and independent variables were entered in the second step.

Table 4.32 *Regression Analysis Summary for Perceived Social Support from Family and Friends and Depression Symptoms*

Overall Model **Predictor Variable**	**B**	**SE B**	**β**	***t***	***p***
Age	.420	.037	.103	11.233	.000
Marital Status	-.027	.050	-.005	-.531	.596
Number of Children	-.037	.020	-.016	-1.821	.069
KTAP Receipt	.857	.051	.143	16.731	.000
SSI Receipt	-.185	.077	-.021	-2.410	.016
Perceived Social Support from Family & Friends	-.476	.010	-.395	-46.706	.000

$R^2 = .197$

Sub-hypothesis 4A states that perceived social support from family and friends is associated with fewer depression symptoms among low-income women when adjusted

for control variables. The sub-hypothesis was tested with an OLS regression model in which depression symptoms was regressed on perceived social support from family and friends, and was found to be significant (F=468.448, p=.000) with 19.7% of the variance in depression symptoms accounted for by the independent variables (R^2=.197). The change in R^2 values from step 1 of the model to step 2 of the model was sizeable (R^2 change = .153) which indicates that the independent variable, perceived social support from family and friends, accounted for much of the variance in depression symptoms. Four variables were significant in the model. Being older is indicative of more depression symptoms (β=.103, p=.000), receiving KTAP is predictive of more depression symptoms (β=.143, p=.000), not receiving SSI is predictive of more depression symptoms (β=-.021, p=.016), and less support from family and friends is predictive of more depression symptoms (β=-.395, p=.000). (See Table 4.32.)

Table 4.33 *Regression Analysis Summary for Perceived Social Support from Family and Friends and Anxiety Symptoms*

Overall Model Predictor Variable	**B**	**SE B**	**β**	***t***	***p***
Age	.295	.035	.080	8.474	.000
Marital Status	-.125	.047	-.025	-2.653	.008
Number of Children	-.035	.019	-.016	-1.845	.065
KTAP Receipt	.731	.048	.135	15.338	.000
SSI Receipt	-.194	.072	-.024	-2.713	.007
Perceived Social Support from Family & Friends	-.351	.009	-.323	-36.959	.000

R^2 = .138

Sub-hypothesis 4B states that perceived social support from family and friends is associated with fewer anxiety symptoms among low-income women when adjusted for control variables. The sub-hypothesis was tested with an OLS regression model which was significant (F=308.092, p=.000) with 13.8% of the variance in anxiety symptoms

accounted for by the independent variables (R^2=.138). From step 1 to step 2 in the model, the R^2 value changes by .138 which indicates that the independent variable is significant in the model. Five of the six independent variables are significant in the model. Being older (β=.080, p=.000), never having been married (β=-.025, p=.008), receiving KTAP (β=.135, p=.000), not receiving SSI (β=-.024, p=.007), and less perceived social support from family and friends (β=-.323, p=.000) are each indicative of more anxiety symptoms. (See Table 4.33.)

Sub-hypothesis 4C states: Perceived social support from family and friends is associated with fewer substance abuse symptoms among low-income women when adjusted for control variables. This sub-hypothesis was tested with an OLS regression model and was also significant (F=21.077, p=.000) but only 1.0% of the variance in substance abuse symptoms was accounted for by independent variables (R^2=.010) and the R^2 change was very small (R^2 change = .001). Not receiving KTAP was indicative of more substance abuse symptoms (β=-.104, p=.000) and less perceived social support from family and friends was also indicative of more substance abuse symptoms (β=-.036, p=.000). (See Table 4.34.)

Table 4.34 *Regression Analysis Summary for Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Overall Model **Predictor Variable**	**B**	**SE B**	**β**	***t***	***p***
Age	.001	.005	.002	.243	.808
Marital Status	.003	.007	.004	.367	.713
Number of Children	-.003	.003	-.011	-1.212	.226
KTAP Receipt	-.077	.007	-.104	-10.972	.000
SSI Receipt	-.008	.011	-.007	-.724	.469
Perceived Social Support from Family & Friends	-.005	.001	-.036	-3.794	.000

R^2 = .010

Table 4.35 *Regression Analysis Summary for Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Overall Model Predictor Variable	B	SE B	β	*t*	*p*
Age	-.011	.011	-.010	-1.099	.313
Marital Status	.039	.015	.026	2.582	.010
Number of Children	-.009	.006	-.014	-1.544	.123
KTAP Receipt	-.183	.015	-.113	-12.065	.000
SSI Receipt	-.042	.023	-.017	-1.863	.063
Perceived Social Support from Family & Friends	-.049	.003	-.150	-16.142	.000

$R^2 = .032$

Sub-hypothesis 4D states that perceived social support from family and friends is associated with fewer substance dependence symptoms among low-income women when adjusted for control variables. When tested with an OLS regression model, this sub-hypothesis was significant (F=63.157, p=.000) and 3.2% of the variance in substance dependence was accounted for by the independent variables (R^2=.032). The R^2 change from step 1 to step 2 was small at .022, but indicates that the independent variable, perceived social support from family and friends did make an individual contribution in the model. Ever having been married (β=.026, p=.010), non-receipt of KTAP (β=-.113, p=.000), and less perceived social support from family and friends (β=-.150, p=.000) were each predictive of more substance dependence symptoms. (See Table 4.35.)

Summary of Hypothesis 4 findings.

Perceived social support is a significant predictor of each outcome: depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms.

Hypothesis 5.

Hypothesis 5 states: When adjusted for control variables, perceived social support will moderate the relationship between human capital (including overall human capital

and each individual human capital factor, (i.e. education and employment)) and depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems. Specifically, women with more perceived social support have more human capital which leads to even fewer mental health problems and substance use problems than women with low perceived social support when adjusted for control variables.

OLS regression models were tested by regressing the dependent variables, depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms on overall human capital and each individual human capital factor and perceived social support from family and friends as well as interaction terms created between overall human capital, each human capital factor, (i.e., years of school completed, current educational program enrollment, current work, number of months it has been since last employment, current volunteer work without pay, and length of time spent at one job) and perceived social support from family and friends. In order to fully examine Hypothesis 5, twenty eight sub-hypotheses were tested using OLS regression models. For each of the models, all control variables: age, marital status, number of children, KTAP receipt, and SSI receipt were entered in the first step. In the second step, human capital factors and perceived social support from family and friends were entered to examine the main effects of these variables. Independent variables were entered in the third step to examine whether perceived social support moderates the relationship between human capital and depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems.

Table 4.36 *Regression Analysis Summary for the Interaction Term Overall Human Capital by Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.429	.038	.105	11.399	.000
Marital Status	-.026	.050	-.005	-.520	.603
Number of Children	-.041	.020	-.017	-1.987	.047
KTAP Receipt	.879	.053	.146	16.722	.000
SSI Receipt	-.226	.080	-.025	-2.837	.005
Step 2: Main Effects					
Overall Human Capital	-.015	.008	-.016	-1.834	.067
Perceived Social Support	-.475	.010	-.394	-46.492	.000
Step 3: Interaction Term					
Overall Human Capital X Perceived Social Support from Family and Friends	.002	.003	.005	.624	.533

$R^2 = .139$

Sub-hypothesis 5A states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between overall human capital and depression symptoms. This sub-hypothesis was tested with an OLS regression model in which depression symptoms was regressed first on overall human capital and perceived social support from family and friends and then on the interaction term between overall human capital and perceived social support from family and friends. The overall model was significant (F=350.921, p=.000) with 19.6% of the variance in depression symptoms accounted for by the independent variables (R^2=.196). The R^2 value increased from .044 in step 1 of the model to .197 in step 2 of the model. Step 2 tested the main effects of the independent variables prior to inclusion in an interaction term and perceived social support was found to be a significant predictor of depression (β= -.394, p=.000) but overall human capital is not significant in the model (β-.016, p=.067). Older age (β=.105, p=.000), fewer children (β=.-.017, p=.047), KTAP receipt (β=.146, p=.000), and non-receipt of SSI (β= -.025, p=.005), were significant indicators of more depression

symptoms. Step 3 of the model tested the interaction between overall human capital and perceived social support from family and friends and the interaction term was not significant (β=.005, p=.533). (See Table 4.36.)

Table 4.37 *Regression Analysis Summary for the Interaction Term Overall Human Capital by Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.301	.035	.082	8.565	.000
Marital Status	-.123	.047	-.025	-2.610	.009
Number of Children	-.035	.019	-.016	-1.847	.065
KTAP Receipt	.737	.049	.136	15.060	.000
SSI Receipt	-.210	.074	-.026	-2.832	.005
Step 2: Main Effects					
Overall Human Capital	-.004	-.481	.630	-.481	.630
Perceived Social Support	-.350	.010	-.323	-36.820	.000
Step 3: Interaction Term					
Overall Human Capital X Perceived Social Support from Family and Friends	-.003	.003	-.009	-1.006	.314

R^2 = .139

Sub-hypothesis 5B states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between overall human capital and anxiety symptoms. This sub-hypothesis, tested with an OLS regression model, was also significant (F=230.637, p=.000) and 13.9% of the variance in anxiety symptoms was accounted for by the independent variables (R^2=.139). The R^2 value increases substantially from step 1 of the model (R^2=.036) to step 2 (R^2=.138) but does not increase in step 3 (R^2=.138) which indicates that the interaction term between overall human capital and anxiety symptoms is not a significant indicator of anxiety symptoms (β= -.009, p=.314). There is a significant main effect demonstrated by perceived social support in step 2 of the model (β= -.323, p=.000) but not by overall human capital (β= -.004, p=.630). In addition, being older (β=.082, p=.000), never having been married (β=-.025,

p=.009), receipt of KTAP (β=.136, p=.000, and non-receipt of SSI (β= -.026, p=.005) are each predictive of more anxiety symptoms (See Table 4.37.)

Table 4.38 *Regression Analysis Summary for the Interaction Term Overall Human Capital by Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.002	.005	.005	.455	.649
Marital Status	.002	.007	.003	.345	.730
Number of Children	-.004	.003	-.012	-1.300	.194
KTAP Receipt	-.074	.007	-.100	-10.323	.000
SSI Receipt	-.012	.011	-.011	-1.094	.274
Step 2: Main Effects					
Overall Human Capital	-.002	.001	-.016	-1.658	.097
Perceived Social Support	-.005	.001	-.035	-3.687	.000
Step 3: Interaction Term					
Overall Human Capital X Perceived Social Support from Family and Friends	.001	.000	.015	1.604	.109

R^2 = .011

Sub-hypothesis 5C states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between overall human capital and substance abuse symptoms. The overall model was significant (F=16.389, p=.000) but only 1.1% of the variance in substance abuse symptoms is explained by the independent variables. R^2 values remain static throughout the model which indicates that the interaction term is not a significant indicator of substance abuse symptoms. Perceived social support demonstrates a significant main effect in step 2 of the model (β= -.35, p=.000) but overall human capital does not demonstrate a significant main effect (β= -.016, p=.097). Receipt of KTAP is a significant indicator of fewer substance abuse symptoms (β= -.100, p=.000). (See Table 4.38.)

Table 4.39 *Regression Analysis Summary for the Interaction Term Overall Human Capital by Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.006	.011	-.005	-.499	.618
Marital Status	.040	.015	.026	2.654	.008
Number of Children	-.011	.006	-.018	-1.899	.058
KTAP Receipt	-.168	.016	-.103	-10.777	.000
SSI Receipt	-.069	.024	-.029	-2.948	.003
Step 2: Main Effects					
Overall Human Capital	-.011	.002	-.045	-4.592	.000
Perceived Social Support	-.048	.003	-.148	-15.922	.000
Step 3: Interaction Term					
Overall Human Capital X Perceived Social Support from Family and Friends	.000	.001	.004	.455	.649

$R^2 = .034$

Sub-hypothesis 5D states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between overall human capital and substance dependence symptoms. This sub-hypothesis, tested with an OLS regression model, was significant (F=50.003, p=.000) and 3.3% of the variance in substance dependence symptoms was accounted for by the independent variables (R^2=.034). The R^2 values did not change from step 2 to step 3 in the model which indicates that the interaction term between overall human capital and substance dependence symptoms was not significant (β=.004, p=.649). However, both overall human capital (β= -.045, p=.000) and perceived social support from family and friends (β= -.148, p=.000) did exhibit main effects in the second step of the model. Additionally, ever having been married (β=.026, p=.008), non-receipt of KTAP (β= -.103, p=.000), and non-receipt of SSI (β= -.029, p=.003) were indicative of more substance dependence symptoms (See Table 4.39.)

Table 4.40 *Regression Analysis Summary for the Interaction Term Current Employment by Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.434	.037	.106	11.616	.000
Marital Status	-.019	.050	-.003	-.371	.710
Number of Children	-.037	.020	-.015	-1.809	.070
KTAP Receipt	.777	.052	.129	14.975	.000
SSI Receipt	-.301	.078	-.033	-3.870	.000
Step 2: Main Effects					
Current Employment	-.015	.002	-.075	-8.682	.000
Perceived Social Support	-.469	.010	-.389	-46.043	.000
Step 3: Interaction Term					
Current Employment X Perceived Social Support from Family and Friends	-.001	.001	-.006	-.714	.475

$R^2 = .202$

Sub-hypothesis 5E states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between current employment and depression symptoms. This sub-hypothesis was tested with an OLS regression model that was significant (F=363.087, p=.000) and 20.2% of the variance in depression symptoms was accounted for by independent variables (R^2=.202). The R^2 value did not increase from step 2 to step 3 of the model (R^2 change=.000) which indicates that the interaction term was not significant in the model (β= -.006, p=.475); however main effects were demonstrated by both current employment (β= -.075, p=.000) and perceived social support from family and friends (β= -.389, p=.000) in step 2 of the model. Additionally, being older (β=.106, p=.000), KTAP receipt (β=.129, p=.000), and receipt of SSI (β= -.074, p=.000) were indicative of more depression symptoms. (See Table 4.40.)

Table 4.41 *Regression Analysis Summary for the Interaction Term Current Employment by Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.306	.035	.083	8.793	.000
Marital Status	-.118	.047	-.024	-2.520	.012
Number of Children	-.035	.019	-.016	-1.836	.066
KTAP Receipt	.668	.048	.124	13.815	.000
SSI Receipt	-.286	.072	-.035	-3.951	.000
Step 2: Main Effects					
Current Employment	-.012	.002	-.066	-7.413	.000
Perceived Social Support	-.346	.010	-.318	-36.360	.000
Step 3: Interaction Term					
Current Employment X Perceived Social Support from Family and Friends	-.001	.001	-.007	-.795	.426

$R^2 = .143$

Sub-hypothesis 5F states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between current employment and anxiety symptoms. The model was significant (F=239.098, p=.000) and 14.3% of the variance in anxiety symptoms was accounted for by the independent variables (R^2=.143). The R^2 value remained static in the model (R^2 change=.000). This indicates that the interaction term between current employment and perceived social support from family and friends was not significant in the model (β= -.007, p=.426). In step 2 of the model, main effects were demonstrated by both current employment (β= -.066, p=.000) and perceived social support (β= -.318, p=.000). Being older (β=.083, p=.000), never having been married (β= -.024, p=.012), KTAP receipt (β=.124, p=.000), and non-receipt of SSI (β= -.035, p=.000) were indicative of more anxiety symptoms. (See Table 4.41.)

Table 4.42 *Regression Analysis Summary for the Interaction Term Current Employment by Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.002	.005	.004	.377	.706
Marital Status	.003	.007	.004	.428	.669
Number of Children	-.003	.003	-.011	-1.206	.228
KTAP Receipt	-.081	.007	-.109	-11.371	.000
SSI Receipt	-.014	.011	-.012	-1.270	.204
Step 2: Main Effects					
Current Employment	-.001	.000	-.031	-3.242	.001
Perceived Social Support	-.005	.001	-.033	-3.532	.000
Step 3: Interaction Term					
Current Employment X Perceived Social Support from Family and Friends	-3.355	.000	-.003	-.303	.762

$R^2 = .012$

Sub-hypothesis 5G states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between current employment and substance abuse symptoms. The overall model was significant (F=17.145, p=.000) with 1.2% of the variance in substance abuse symptoms accounted for by the independent variables (R^2=.012). The unchanged R^2 value (R^2 change=.000) from step 2 to step 3 in the model indicates that the interaction term between current employment and perceived social support from family and friends is not significant in the model (β= -.003, p=.762). Main effects were found in step 2 of the model from both current employment (β= -.031, p=.001) and perceived social support (β= -.033, p=.000). Non-receipt of KTAP (β= -.109, p=.000) was a significant indicator of more substance abuse symptoms. (See Table 4.42.)

Sub-hypothesis 5H states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between current employment and substance dependence symptoms. The model was significant overall

(F=58.123, p=.000) with 3.9% of the variance in substance dependence symptoms explained by the independent variables (R^2=.039). The R^2 value remains unchanged from step 2 of the model to step 3 of the model (R^2 change=.000) which indicates that the interaction term between current employment and perceived social support from family and friends is not significant in the model (β= -.005, p=.559). Main effects were found in step 2 of the model from both current employment (β= -.086, p=.000) and perceived social support (β= -.143, p=.000). Non-receipt of KTAP (β= -.128, p=.000) and non-receipt of SSI (β= -.032, p=.001) are indicative of more substance dependence symptoms. (See Table 4.43.)

Table 4.43 *Regression Analysis Summary for the Interaction Term Current Employment by Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.007	.011	-.006	-.641	.522
Marital Status	.041	.015	.027	2.749	.006
Number of Children	-.009	.006	-.014	-1.528	.126
KTAP Receipt	-.208	.015	-.128	-13.527	.000
SSI Receipt	-.078	.023	-.032	-3.402	.001
Step 2: Main Effects					
Current Employment	-.005	.001	-.086	-9.111	.000
Perceived Social Support	-.047	.003	-.143	-15.444	.000
Step 3: Interaction Term					
Current Employment X Perceived Social Support from Family and Friends	.000	.000	-.005	-.585	.559

R^2 = .039

Sub-hypothesis 5I states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between number of months since last employed and depression symptoms. The overall model was significant (F=351.548, p=.000) with 19.7% of the variance in depression symptoms explained by

the independent variables (R^2=.197). However, the R^2 value remained static (R^2 change=.000) from step 2 to step 3 which indicates that the interaction term between the number of months since last employment and perceived social support from family and friends (β= -.002, p=.820). In step 2, main effects were demonstrated by perceived social support (β= -.395, p=.000) but not by the number of months since last employment (β= -.012, p=.192). Being older (β=.100, p=.000), receipt of KTAP (β=.142, p=.000), and non-receipt of SSI (β= -.025, p=.007) were indicative of more depression symptoms. (See Table 4.44.)

Table 4.44 *Regression Analysis Summary for the Interaction Term Number of Months Since Last Employed by Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.409	.038	.100	10.682	.000
Marital Status	-.025	.050	-.004	-.490	.624
Number of Children	-.037	.020	-.016	-1.827	.068
KTAP Receipt	.855	.051	.142	16.697	.000
SSI Receipt	-.220	.081	-.025	-2.705	.007
Step 2: Main Effects					
Number of Months Since Last Employed	-.001	.001	-.012	-1.304	.192
Perceived Social Support	-.476	.010	-.395	-46.695	.000
Step 3: Interaction Term					
Current Employment X Perceived Social Support from Family and Friends	-6.463	.000	-.002	-.228	.820

R^2 = .197

Table 4.45 *Regression Analysis Summary for the Interaction Term Number of Months Since Last Employed by Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.288	.036	.078	8.058	.000
Marital Status	-.123	.047	-.025	-2.623	.009
Number of Children	-.035	.019	-.016	-1.832	.067
KTAP Receipt	.730	.048	.135	15.310	.000
SSI Receipt	-.218	.076	-.027	-2.869	.004
Step 2: Main Effects					
Number of Months Since Last Employed	-.001	.001	-.009	-.949	.343
Perceived Social Support	-.351	.009	-.323	-36.950	.000
Step 3: Interaction Term					
Number of Months Since Last Employed X Perceived Social Support from Family and Friends	.000	.000	-.007	-.827	.408

$R^2 = .139$

Sub-hypothesis 5J states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between number of months since last employed and anxiety symptoms. The sub-hypothesis was tested with an OLS regression model and was significant (F=231.259, p=.000) with 13.9% of the variance in anxiety symptoms explained by the independent variables (R^2=.139). The R^2 value, however, remains unchanged from step 2 in the model to step 3 (R^2 change = .000) which indicates a non-significant interaction term between the number of months since last employed and perceived social support from family and friends in step 3 (β= -.007, p=.408). Main effects were demonstrated by perceived social support in step 2 of the model (β= -.323, p=.000) but not by the number of months since last employed (β= -.009, p=.343). Being older (β=.078, p=.000), never having been married (β= -.025, p=.009),

KTAP receipt (β=.135, p=.000), and non-receipt of SSI (β= -.027, p=.004) are indicative of more anxiety symptoms. (See Table 4.45.)

Table 4.46 *Regression Analysis Summary for the Interaction Term Number of Months Since Last Employed by Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.001	.005	-.001	-.111	.911
Marital Status	.003	.007	.004	.422	.673
Number of Children	-.003	.003	-.012	-1.254	.210
KTAP Receipt	-.077	.007	-.104	-11.004	.000
SSI Receipt	-.014	,011	-.013	-1.246	.213
Step 2: Main Effects					
Number of Months Since Last Employed	.000	.000	-.017	-1.668	.095
Perceived Social Support	-.005	.001	-.035	-3.780	.000
Step 3: Interaction Term					
Number of Months Since Last Employed X Perceived Social Support from Family and Friends	4.075	.000	.010	1.049	.294

$R^2 = .011$

Sub-hypothesis 5K states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between number of months since last employed and substance abuse symptoms. The overall model was significant (F=16.296, p=.000) with 1.1% of the variance in substance abuse symptoms explained by the independent variables (R^2=.011). The R^2 value remains unchanged from step 2 to step 3 of the model (R^2 change = .000) which indicates that the interaction term between the number of months since last employed and perceived social support from family and friends is not significant (β=.010, p=.294). Main effects are demonstrated by perceived social support in step 2 of the model (β= -.035, p=.000) but not by the number

of months since last employed (β= -.017, p=.095). Non-receipt of KTAP (β= -.104, p=.000) is indicative of more substance abuse symptoms.(See Table 4.46.)

Sub-hypothesis 5L states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between number of months since last employed and substance dependence symptoms. The sub-hypothesis was tested with an OLS regression model and was found to be significant (F=49.037, p=.000) with 3.3% of the variance in substance dependence symptoms accounted for by the independent variables (R^2=.033). The R^2 value remains unchanged from step 2 to step 3 of the model (R^2 change = .000) which indicates that the interaction term between the number of months since last employed and perceived social support from family and friends is not significant (β= -.006, p=.533). Main effects were demonstrated in step 2 of the model by both the number of months since last employed (β= -.036, p=.000) and perceived social support (β= -.150, p=.000). Never having been married (β=.027, p=.007), non-receipt of KTAP (β= -.114, p=.000), and non-receipt of SSI (β= -.029, p=.003) are indicative of more substance dependence symptoms. (See Table 4.47.)

Table 4.47 *Regression Analysis Summary for the Interaction Term Number of Months Since Last Employed by Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.020	.011	-.018	-1.761	.078
Marital Status	.040	.015	.027	2.693	.007
Number of Children	-.009	.006	-.015	-1.561	.119
KTAP Receipt	-.184	.015	-.114	-12.149	.000
SSI Receipt	-.071	.024	-.029	-2.936	.003
Step 2: Main Effects					
Number of Months Since Last Employed	-.001	.000	-.036	-3.550	.000
Perceived Social Support	-.049	.003	-.150	-16.120	.000
Step 3: Interaction Term					
Number of Months Since Last Employed X Perceived Social Support from Family and Friends	-5.238	.000	-.006	-.624	.533

$R^2 = .033$

Table 4.48 *Regression Analysis Summary for the Interaction Term Volunteer Work Without Pay and Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.423	.037	.103	11.279	.000
Marital Status	-.028	.050	-.005	-.555	.579
Number of Children	-.038	.020	-.016	-1.848	.065
KTAP Receipt	.861	.054	.143	15.944	.000
SSI Receipt	-.191	.077	-.021	-2.480	.013
Step 2: Main Effects					
Volunteer Work Without Pay	-.007	.019	-.003	-.358	.720
Perceived Social Support	-.476	.010	-.394	-46.593	.000
Step 3: Interaction Term					
Volunteer Work Without Pay X Perceived Social Support from Family and Friends	.014	.008	.015	1.768	.077

$R^2 = .197$

Sub-hypothesis 5M states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between volunteer work

not for pay and depression symptoms. The sub-hypothesis in which depression symptoms was regressed on the interaction term between volunteer work not for pay and perceived social support from family and friends, was tested with an OLS regression model and was found to be significant (F=350.843, p=.000) with 19.7% of the variance in depression symptoms accounted for by the independent variables (R^2=.197). The R^2 value remains unchanged from step 2 to step 3 in the model (R^2 change = .000) which indicates that the interaction term is not significant in the model (β=.015, p=.077). Main effects of perceived social support from family and friends were demonstrated in step 2 of the model (β= -.394, p=.000) but volunteer work without pay did not demonstrate any main effects (β= -.003, p=.720). Being older (β=.103, p=.000), KTAP receipt (β=.143, p=.000), and non-receipt of SSI (β=-.021, p=.013) are indicative of more depression symptoms. (See Table 4.48.)

Table 4.49 *Regression Analysis Summary for the Interaction Term Volunteer Work Without Pay and Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.298	.035	.081	8.553	.000
Marital Status	-.122	.047	-.025	-2.602	.009
Number of Children	-.034	.019	-.016	-1.803	.071
KTAP Receipt	.711	.050	.132	14.135	.000
SSI Receipt	-.195	.072	-.024	-2.718	.007
Step 2: Main Effects					
Volunteer Work Without Pay	.023	.018	.012	1.299	.194
Perceived Social Support	-.351	.010	-.323	-36.888	.000
Step 3: Interaction Term					
Volunteer Work Without Pay X Perceived Social Support from Family and Friends	.002	.007	.003	.334	.738

R^2 = .139

Sub-hypothesis 5N states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between volunteer work not for pay and anxiety symptoms. This sub-hypothesis was tested in an OLS regression model and was found to be significant (F=230.718, p=.000) with 13.9% of the variance in anxiety symptoms accounted for by the independent variables (R^2=.139). An unchanged R^2 value from step 2 to step 3 in the model (R^2 change = .000) indicates that the interaction term between volunteer work not for pay and perceived social support is not significant (β=.003, p=.738). Main effects of perceived social support from family and friends is demonstrated in step 2 of the model (β=-.323, p=.000) but not for volunteer work without pay (β=.012, p=.194). Being older (β=.081, p=.000), ever having been married (β= -.025, p=.009), KTAP receipt (β=.132, p=.000), and non-receipt of SSI (β= -.024, p=.007) are indicative of more anxiety symptoms. (See Table 4.49.)

Table 4.50 *Regression Analysis Summary for the Interaction Term Volunteer Work Without Pay and Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.002	.005	.003	.299	.765
Marital Status	.002	.007	.003	.303	.762
Number of Children	-.003	.003	-.011	-1.181	.238
KTAP Receipt	-.074	.007	-.099	-9.973	.000
SSI Receipt	-.008	.011	-.008	-.795	.427
Step 2: Main Effects					
Volunteer Work Without Pay	-.004	.003	-.014	-1.470	.142
Perceived Social Support	-.005	.001	-.035	-3.738	.000
Step 3: Interaction Term					
Volunteer Work Without Pay X Perceived Social Support from Family and Friends	.001	.001	.011	1.213	.225

R^2 = .032

Sub-hypothesis 5O states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between volunteer work not for pay and substance abuse symptoms. The sub-hypothesis was tested with an OLS regression model that was found to be significant (F=16.176, p=.000) with 1.1% of the variance in substance abuse symptoms accounted for by the independent variables (R^2=.011). The R^2 value remains static from step 2 to step 3 of the model which indicates that the interaction term tested in step 3 is not significant (β=.011, p=.225). A main effect of perceived social support from family and friends was demonstrated in step 2 of the model (β= -.035, p=.000) but no main effect was found for volunteer work without pay (β= -.014, p=.142). Non-receipt of KTAP (β= -.099, p=.000) is indicative of more substance abuse symptoms. (See Table 4.50.)

Sub-hypothesis 5P states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between volunteer work not for pay and substance dependence symptoms. This sub-hypothesis was tested with an OLS regression model and was found to be significant (F=48.167, p=.000) with 3.3% of the variance accounted for by the independent variables (R^2=.033). An indication that the interaction term between volunteer work not for pay and perceived social support from family and friends is not significant in step 3 of the model (β=.011, p=.231) is that the R^2 value remains unchanged from step 2 to step 3 of the model (R^2 change = .000). Main effects were demonstrated for both volunteer work without pay (β= -.023, p=.018) and perceived social support (β= -.149, p=.000) in the second step of the model. Ever having been married (β=.025, p=.011), non-receipt of KTAP (β= -.106, p=.000), and non-receipt of SSI (β= -.022, p=.050) are indicative of more substance dependence symptoms. (See Table 4.51.)

Table 4.51 *Regression Analysis Summary for the Interaction Term Volunteer Work Without Pay and Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.011	.011	-.010	-.961	.337
Marital Status	.038	.015	.025	2.553	.011
Number of Children	-.009	.006	-.015	-1.570	.117
KTAP Receipt	-.172	.016	-.106	-10.762	.000
SSI Receipt	-.045	.023	-.018	-1.963	.050
Step 2: Main Effects					
Volunteer Work Without Pay	-.013	.006	-.023	-2.374	.018
Perceived Social Support	-.049	.003	-.149	-16.082	.000
Step 3: Interaction Term					
Volunteer Work Without Pay X Perceived Social Support from Family and Friends	.003	.002	.011	1.197	.231

$R^2 = .033$

Sub-hypothesis 5Q states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between length of time spent at one job and depression symptoms. This sub-hypothesis, in which depression symptoms was regressed on the interaction term between length of time spent at one job and perceived social support from family and friends, was tested using an OLS regression model. The model was found to be significant, (F=351.319, p=.000) with 19.7% of the variance in depression symptoms accounted for by the independent variables (R^2=.197). An unchanged R^2 value from step 2 to step 3 in the model (R^2 change = .000) indicates that the interaction term tested in step 3 is not significant (β= -.003, p=.746). Main effects were demonstrated in step 2 of the model for perceived social support from family and friends (β= -.395, p=.000) but not for length of time spent at one job (β=.004, p=.670). Being older (β=.101, p=.000), receipt of KTAP (β=.143, p=.000), and non-receipt of SSI (β= -.020, p=.024) are indicative of more depression symptoms. (See Table 4.52.)

Table 4.52 *Regression Analysis Summary for the Interaction Term Length of Time Spent at One Job and Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.413	.041	.101	9.982	.000
Marital Status	-.026	.050	-.005	-.525	.599
Number of Children	-.037	.020	-.015	-1.802	.072
KTAP Receipt	.858	.051	.143	16.718	.000
SSI Receipt	-.178	.079	-.020	-2.264	.024
Step 2: Main Effects					
Length of Time at One Job	.013	.031	.004	.427	.670
Perceived Social Support	-.476	.010	-.395	-46.699	.000
Step 3: Interaction Term					
Length of Time at One Job X Perceived Social Support from Family and Friends	-.004	.013	-.003	-.325	.746

$R^2 = .197$

Sub-hypothesis 5R states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between length of time spent at one job and anxiety symptoms. The sub-hypothesis was tested with an OLS regression model that was significant (F=231.086, p=.000) with 13.9% of the variance in anxiety symptoms accounted for by the independent variables (R^2=.139). The R^2 value remains static from step 2 in the model to step 3 (R^2 change = .000) which indicates that the interaction term between length of time spent at one job and perceived social support from family and friends tested in step 3 is not significant (β=.004, p=.669). Significant main effects were demonstrated in step 2 of the model for perceived social support from family and friends (β= -.324, p=.000) but not for length of time spent at one job (β=.005, p=.642). Being older (β=.078, p=.000), never having been married (β= -.025, p=.008), KTAP receipt (β=.136, p=.000), and non-receipt of SSI (β= -.023, p=.011) are indicative of more anxiety symptoms. (See Table 4.53.)

Table 4.53 *Regression Analysis Summary for the Interaction Term Length of Time Spent at One Job and Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.287	.039	.078	7.459	.000
Marital Status	-.125	.047	-.025	-2.659	.008
Number of Children	-.034	.019	-.016	-1.813	.070
KTAP Receipt	.733	.048	.136	15.334	.000
SSI Receipt	-.186	.073	-.023	-2.543	.011
Step 2: Main Effects					
Length of Time at One Job	.014	.029	.005	.465	.642
Perceived Social Support	-.351	.010	-.324	-36.957	.000
Step 3: Interaction Term					
Length of Time at One Job X Perceived Social Support from Family and Friends	.005	.012	.004	.428	.669

$R^2 = .139$

Sub-hypothesis 5S states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between length of time spent at one job and substance abuse symptoms. This sub-hypothesis was tested with an OLS regression model which was significant (F=16.602, p=.000) with 1.1% of the variance in substance abuse symptoms accounted for by the independent variables (R^2=.011). The R^2 value remains unchanged from step 2 of the model to step 3 (R^2 change = .000) which indicates that the interaction term between length of time spent at one job and perceived social support from family and friends is not significant (β= -.006, p=.495). Main effects were demonstrated in step 2 of the model for both length of time spent at one job (β=.025, p=.016) and perceived social support (β= -.036, p=.000). Non-receipt of KTAP was indicative of more substance abuse symptoms (β= -.102, p=.000). (See Table 4.54.)

Table 4.54 *Regression Analysis Summary for the Interaction Term Length of Time Spent at One Job and Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.005	.006	-.009	-8.00	.424
Marital Status	.003	.007	.004	.380	.704
Number of Children	-.003	.003	-.010	-1.098	.272
KTAP Receipt	-.076	.007	-.102	-10.784	.000
SSI Receipt	-.002	.011	-.002	-.193	.847
Step 2: Main Effects					
Length of Time at One Job	.010	.004	.025	2.417	.016
Perceived Social Support	-.005	.001	-.036	-3.858	.000
Step 3: Interaction Term					
Length of Time at One Job X Perceived Social Support from Family and Friends	-.001	.002	-.006	-.682	.495

$R^2 = .011$

Sub-hypothesis 5T states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between length of time spent at one job and substance dependence symptoms. This sub-hypothesis was tested utilizing an OLS regression model. The model was significant (F=47.910, p=.000) with 3.2% of the variance in substance dependence symptoms accounted for by the independent variables. The unchanged R^2 value from step 2 to step 3 in the model (R^2 change = .000) indicates that the interaction term tested in step 3 is not significant (β= -.019, p=.059). Main effects in step 2 of the model were demonstrated for perceived social support from family and friends (β= -.150, p=.000) but not for length of time spent at one job (β=.001, p=.939). Ever having been married (β=.026, p=.009) and non-receipt of KTAP (β= -.113, p=.000) are indicative of more substance dependence symptoms. (See Table 4.55.)

Table 4.55 *Regression Analysis Summary for the Interaction Term Length of Time Spent at One Job and Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.011	.012	-.010	-.914	.361
Marital Status	.039	.015	.026	2.616	.009
Number of Children	-.009	.006	-.015	-1.567	.117
KTAP Receipt	-.183	.015	-.113	-12.042	.000
SSI Receipt	-.043	.023	-.018	-1.826	.068
Step 2: Main Effects					
Length of Time at One Job	.001	.009	.001	.077	.939
Perceived Social Support	-.049	.003	-.150	-16.137	.000
Step 3: Interaction Term					
Length of Time at One Job X Perceived Social Support from Family and Friends	-.008	.004	-.019	-2.063	.059

$R^2 = .032$

Sub-hypothesis 5U states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between current educational program enrollment and depression symptoms This sub-hypothesis was tested with an OLS regression model in which depression symptoms was regressed first on overall human capital and perceived social support from family and friends and then on the interaction term between overall human capital and perceived social support from family and friends. The overall model was significant (F=351.588, p=.000) with 19.7% of the variance in depression symptoms accounted for by the independent variables (R^2=.197). The R^2 value remained unchanged from step 2 to step 3 of the model (R^2 change = .000) which is an indication that the interaction term between current educational program enrollment and perceived social support from family and friends that was tested in step 3 is not significant (β=.012, p=.166). Significant main effects were demonstrated in step 2 for perceived social support (β= -.399, p=.000) but not for current

educational program enrollment (β= -.003, p=.752). Being older (β=.102, p=.000), receipt of KTAP (β=.143, p=.000), and non-receipt of SSI (β= -.021, p=.015) are indicative of more depression symptoms. (See Table 4.56.)

Table 4.56 *Regression Analysis Summary for the Interaction Term Current Educational Program Enrollment and Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.419	.038	.102	11.165	.000
Marital Status	-.026	.050	-.005	-.517	.605
Number of Children	-.038	.020	-.016	-1.841	.066
KTAP Receipt	.859	.052	.143	16.570	.000
SSI Receipt	-.186	.077	-.021	-2.424	.015
Step 2: Main Effects					
Current Educational Program Enrollment	-.021	.068	-.003	-.316	.752
Perceived Social Support	-.476	.010	-.395	-46.679	.000
Step 3: Interaction Term					
Current Educational Program Enrollment X Perceived Social Support from Family and Friends	.041	.029	.012	1.384	.166

R^2 = .197

Sub-hypothesis 5V states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between current educational program enrollment and anxiety symptoms. The sub-hypothesis was tested with an OLS regression model. The model was found to be significant (F=231.166, p=.000) with 13.9% of the variance in anxiety symptoms accounted for by the independent variables (R^2=.139). The unchanged R^2 value from step 2 to step 3 of the model (R^2 change = .000) indicates that the interaction term between current educational program enrollment and perceived social support from family and friends is not significant (β= -.008, p=.367). Main effects were demonstrated in step 2 for both current

educational program enrollment (β= -.022, p=.023) and perceived social support from family and friends (β= -.035, p=.000). Being older, (β=.080, p=.000), never having been married (β= -.025, p=.008), receipt of KTAP (β=.136, p=.000), and non-receipt of SSI (β= -.024, p=.006) are indicative of more anxiety symptoms. (See Table 4.57.)

Table 4.57 *Regression Analysis Summary for the Interaction Term Current Educational Program Enrollment and Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.294	.035	.080	8.418	.000
Marital Status	-.124	.047	-.025	-2.648	.008
Number of Children	-.035	.019	-.016	-1.841	.066
KTAP Receipt	.734	.048	.136	15.212	.000
SSI Receipt	-.195	.072	-.024	-2.725	.006
Step 2: Main Effects					
Current Educational Program Enrollment	-.023	.063	-.003	-.363	.716
Perceived Social Support	-.351	.010	-.323	-36.935	.000
Step 3: Interaction Term					
Current Educational Program Enrollment X Perceived Social Support from Family and Friends	-.025	.027	-.008	-.902	.367

R^2 = .139

Sub-hypothesis 5W states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between current educational program enrollment and substance abuse symptoms. The sub-hypothesis was tested using an OLS regression model that was found to be significant (F=16.777, p=.000) with 1.2% of the variance in substance abuse symptoms accounted for by the independent variables. The R^2 value remains unchanged from step 2 to step 3 of the model (R^2 change = .000) which indicates that the interaction term tested in step 3 is not significant (β=.016, p=.113). Main effects were demonstrated in step 2 for both current

educational program enrollment (β= -.022, p=.023) and perceived social support from family and friends (β= -.035, p=.000). Non-receipt of KTAP is indicative of more substance abuse symptoms (β= -.100, p=.000). (See Table 4.58.)

Table 4.58 *Regression Analysis Summary for the Interaction Term Current Educational Program Enrollment and Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.000	.005	.001	.051	.959
Marital Status	.003	.007	.004	.429	.668
Number of Children	-.004	.003	-.012	-1.264	.206
KTAP Receipt	-.074	.007	-.100	-10.495	.000
SSI Receipt	-.009	.011	-.008	-.825	.409
Step 2: Main Effects					
Current Educational Program Enrollment	-.021	.009	-.022	-2.274	.023
Perceived Social Support	-.005	.001	-.035	-3.733	.000
Step 3: Interaction Term					
Current Educational Program Enrollment X Perceived Social Support from Family and Friends	.006	.004	.016	1.587	.113

R^2 = .012

Sub-hypothesis 5X states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between current educational program enrollment and substance dependence symptoms. The model, in which substance dependence symptoms was regressed on the interaction term between current educational program enrollment and perceived social support from family and friends, was tested with an OLS regression model and was found to be significant (F=52.190, p=.000) with 3.5% of the variance in substance dependence symptoms accounted for by the independent variables (R^2=.035). The R^2 value remains nearly constant from step 2 to step 3 in the model (R^2 change = .001) which is an indication that

the interaction term between current educational program enrollment and substance dependence symptoms is not significant; however, the interaction term tested in step 3 of the model is significant (β=.034, p=.001).

Table 4.59 *Regression Analysis Summary for the Interaction Term Current Educational Program Enrollment and Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.016	.011	-.014	-1.433	.152
Marital Status	.041	.015	.027	2.721	.007
Number of Children	-.010	.006	-.016	-1.661	.097
KTAP Receipt	-.171	.015	-.106	-11.168	.000
SSI Receipt	-.047	.023	-.020	-2.089	.037
Step 2: Main Effects					
Current Educational Program Enrollment	-.101	.020	-.047	-5.046	.000
Perceived Social Support	-.048	.003	-.149	-16.019	.000
Step 3: Interaction Term					
Current Educational Program Enrollment X Perceived Social Support from Family and Friends	.030	.009	.034	3.453	.001

$R^2 = .035$

In order to determine the moderation effects of the interaction term, the coefficients were plotted. The graph revealed that despite the interaction term being significant in the model (β=.034, p=.001), the regression lines created by current educational program enrollment and perceived social support from family and friends did not interact with one another which had been indicated by the R^2 change value of .000. Thus, the interaction term is not actually significant. Main effects of both current educational program enrollment (β= -.047, p=.000) and perceived social support from family and friends (β= -.149, p=.000) were demonstrated in step 2 of the model. Ever having been married,

(β=.027, p=.007), non-receipt of KTAP (β= -.106, p=.000), and non-receipt of SSI (β= -.020, p=.037) are indicative of more substance dependence symptoms. (See Table 4.59.)

Table 4.60 *Regression Analysis Summary for the Interaction Term Years of School Completed and Perceived Social Support from Family and Friends and Depression Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.442	.038	.108	11.673	.000
Marital Status	-.025	.050	-.004	-.494	.621
Number of Children	-.047	.021	-.020	-2.302	.021
KTAP Receipt	.848	.051	.141	16.567	.000
SSI Receipt	-.221	.077	-.025	-2.860	.004
Step 2: Main Effects					
Years of School Completed	-.043	.012	-.032	-3.694	.000
Perceived Social Support	-.475	.010	-.394	-46.550	.000
Step 3: Interaction Term					
Years of School Completed X Perceived Social Support from Family and Friends	-.012	.005	-.021	-2.499	.012

$R^2 = .198$

Sub-hypothesis 5Y states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between years of school completed and depression symptoms. The sub-hypothesis was tested with an OLS regression model in which depression symptoms was regressed on the interaction term between years of school completed and perceived social support from family and friends which was found to be significant (F=354.372, p=.000) with 19.8% of the variance in depression symptoms accounted for by the independent variables (R^2=.198). The R^2 change value remains static at .000 which seems to indicate that the interaction term is not significant in step 3 of the model; however, the interaction term between years of school completed and perceived social support is significant (β= -.021, p=.012). In order to determine the moderation effects of the interaction term, the coefficients were plotted.

However, when plotted, there was no actual interaction between the variables. Thus, the interaction is not meaningful. Again, the static R^2 statistic (R^2 change = .000) was an indication that the interaction term was not significant. In step 2, main effects were determined for both years of school completed (β= -.032, p=.000) and perceived social support from family and friends (β= -.394, p=.000). Being older (β=.108, p=.000), having fewer children (β= -.020, p=.021), receipt of KTAP (β=.141, p=.000), and non-receipt of SSI (β= -.025, p=.004) are indicative of more depression symptoms. (See Table 4.60.)

Table 4.61 *Regression Analysis Summary for the Interaction Term Years of School Completed and Perceived Social Support from Family and Friends and Anxiety Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.313	.035	.085	8.873	.000
Marital Status	-.123	.047	-.025	-2.622	.009
Number of Children	-.043	.019	-.020	-2.264	.024
KTAP Receipt	.725	.048	.134	15.191	.000
SSI Receipt	-.224	.072	-.028	-3.107	.002
Step 2: Main Effects					
Years of School Completed	-.035	.011	-.029	-3.239	.001
Perceived Social Support	-.350	.010	-.322	-36.818	.000
Step 3: Interaction Term					
Years of School Completed X Perceived Social Support from Family and Friends	-.011	.005	-.020	-2.337	.019

R^2 = .140

Sub-hypothesis 5Z states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between years of school completed and anxiety symptoms. The sub-hypothesis was tested with an OLS regression model which was significant (F=233.345, p=.000) with 14.0% of the variance in anxiety symptoms accounted for by the independent variables (R^2=.140). The R^2 change value remains static at .000 which seems to indicate that the interaction term is

not significant in step 3 of the model; however, the interaction between years of school completed and perceived social support from family and friends is shown to be significant (β= -.020, p=.019). In order to determine the moderation effects in the model, the unstandardized coefficients were plotted. The resulting graph determined that there was no actual interaction between the regression lines – as indicated by the R^2 change value of .000. Main effects were determined in step 2 of the model for both years of school completed (β= -.029, p=.001) and perceived social support (β= -.322, p=.000). Being older (β=.085, p=.000), never having been married (β= -.025, p=.009), having fewer children (β= -.020, p=.024), receipt of KTAP (β=.134, p=.000), and non-receipt of SSI (β= -.028, p=.002) were all indicative of more anxiety symptoms. (See Table 4.61.)

Table 4.62 *Regression Analysis Summary for the Interaction Term Years of School Completed and Perceived Social Support from Family and Friends and Substance Abuse Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	.002	.005	.003	.295	.768
Marital Status	.003	.007	.004	.374	.709
Number of Children	-.004	.003	-.012	-1.248	.212
KTAP Receipt	-.077	.007	-.104	-10.975	.000
SSI Receipt	-.008	.011	-.007	-.753	.451
Step 2: Main Effects					
Years of School Completed	-.001	.002	-.003	-.341	.733
Perceived Social Support	-.005	.001	-.035	-3.777	.000
Step 3: Interaction Term					
Years of School Completed X Perceived Social Support from Family and Friends	.000	.001	.002	.264	.792

R^2 = .011

Sub-hypothesis 5AA states that when adjusted for control variables, perceived social support from family and friends will moderate the relationship between years of school completed and substance abuse symptoms. The sub-hypothesis was tested with an

OLS regression model which was found to be significant (F=15.829, p=.000) with 1.1% of the variance in substance abuse symptoms accounted for by the independent variables. The R^2 value remains unchanged from step 2 in the model to step 3 (R^2 change = .000) which is an indication that the interaction term between years of school completed and perceived social support from family and friends is not significant (β=.002, p=.792). In step 2 of the model, main effects are demonstrated by perceived social support (β= -.035, p=.000) but not by years of school completed (β= -.003, p=.733). Non-receipt of KTAP is a significant indicator of more substance abuse symptoms (β= -.104, p=.000). (See Table 4.62.)

Table 4.63 *Regression Analysis Summary for the Interaction Term Years of School Completed and Perceived Social Support from Family and Friends and Substance Dependence Symptoms*

Variable Name	B	SE B	β	*t*	*p*
Step 1: Controls					
Age	-.010	.011	-.009	-.909	.364
Marital Status	.039	.015	.026	2.581	.010
Number of Children	-.010	.006	-.015	-1.605	.108
KTAP Receipt	-.183	.015	-.113	-12.087	.000
SSI Receipt	-.045	.023	-.018	-1.953	.051
Step 2: Main Effects					
Years of School Completed	-.002	.003	-.006	-.608	.543
Perceived Social Support	-.049	.003	-.150	-16.105	.000
Step 3: Interaction Term					
Years of School Completed X Perceived Social Support from Family and Friends	-.003	.001	-.016	-1.782	.075

R^2 = .032

Sub-hypothesis 5BB states: When adjusted for control variables, perceived social support from family and friends will moderate the relationship between years of school completed and substance depression symptoms. The sub-hypothesis was tested using an OLS regression model which was found to be significant (F=47.817, p=.000) with 3.2%

of the variance in substance dependence accounted for by the independent variables (R^2=.032). The R^2 value remains static from step 2 to step 3 of the model which indicates that the interaction term tested in step 3 is not significant (β= -.016, p=.075). Ever having been married (β=.026, p=.010), non-receipt of KTAP (β= -.113, p=.000), and non-receipt of SSI (β= -.006, p=.051) are indicative of more substance dependence symptoms. (See Table 4.63.)

Summary of Hypothesis 5 findings.

According to the OLS regression coefficients, perceived social support from family and friends is a significant moderator of the relationship between current educational program enrollment and substance dependence symptoms. Perceived social support was also found to moderate the relationships between years of school completed and depression symptoms and anxiety symptoms according to the OLS regression coefficients. However, plotting the coefficients revealed that there was no actual interaction between the variables as indicated by the unchanged R^2 value. Thus, there are no true moderation effects present in these analyses.

Summary of Hypothesis Tests

Several hypothesis tests were significant. Hypothesis 1 results are: Overall human capital is a significant predictor of depression and substance dependence symptoms. However, overall human capital is not significant for anxiety and substance abuse symptoms. Hypothesis 2 results indicate that the number of years of school completed is a significant predictor of depression symptoms and anxiety symptoms while current educational program enrollment is significantly predictive of substance abuse and substance dependence symptoms. Results of hypothesis 3 indicate that current employment is a significant predictor of depression and anxiety symptoms as well as

substance abuse and substance dependence symptoms. None of the other employment measures were found to be significant. Hypothesis 4 results are: Perceived social support is a significant predictor of each outcome: depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms. Results of hypothesis 5 are: According to the OLS regression coefficients, perceived social support from family and friends is a significant moderator of the relationship between current educational program enrollment and substance dependence symptoms. Perceived social support was also found to moderate the relationships between years of school completed and depression symptoms and anxiety symptoms according to the OLS regression coefficients. However, plotting the coefficients revealed that there was no actual interaction between the variables as indicated by the unchanged R^2 value. Thus, there are no true moderation effects present in these analyses.

Chapter 5: Discussion

The purpose of this study was to examine the relationship between human capital and mental health problems and substance use problems and whether those relationships were moderated by social support among a targeted, vulnerable sample of low-income women. Specifically, the purpose of this study was to examine the following research questions: 1) Is human capital associated with mental health problems and substance use problems experienced by low-income women?; 2) How are individual human capital factors (i.e., education, income, and employment) associated with mental health problems and substance use problems among low-income women?; 3) Does social support moderate the relationships between human capital, mental health, and substance use problems among low-income women?

This study is unique. It fills a gap in the literature by answering some preliminary questions about human capital among low-income women utilizing a social science perspective. Importantly, this study brings low-income women into the conversation on human capital. This study is also unique in that educational levels, income, and employment history are viewed as strengths rather than as limitations among low-income women. Generally, women with low-incomes are characterized by their lack of education, income, and employment – components usually necessary in human capital studies. This study re-characterizes low-income women as having strengths and examines the extent to which these strengths are indicative of their life outcomes.

Human capital theory, the stress-buffering theory of social support, and self-relational theory were the basis for hypothesis formulation for this study. Human capital theory, which has been defined as an exclusive set of knowledge and skills that each individual accumulates and employs in unique ways (Gao, Gill, Schmidt, & Pratt, 2010)

to increase earnings and promote positive opportunities and life outcomes (Becker, 1995; Mincer, 1989), was utilized as the basis for this study alongside theories on perceived social support and self-relational theory. The stress-buffering theory of social support states that individuals often experience major events and traumatic moments during their lifetimes and that when individuals perceive that they have positive, supportive people in their milieu, they are better able to cope with those negative experiences (Cobb, 1976). Self-relational theory understands women as needing "mutual, empathic, authentic relationships" in order to experience personal "emotional growth and change" and to live psychologically fulfilling lives (Markoff, Finkelstein, Kammerer, Kreiner, & Prost, 2005, p. 228). The combination of human capital theory, the stress-buffering theory of social support, and self-relational theory were the basis for this study's hypotheses.

Chapter 5 presents an overview of study findings as well as possible explanations of study findings and how those findings relate to the current literature. This study's contributions to the literature are also described. In addition, discussions of study limitations, future directions for research on low-income women, human capital, social support, mental health problems, and substance use problems, and implications for social work are provided.

Sample Descriptives and Bivariate Relationships

This study utilizes measures that describe human capital, specifically education and employment; perceived social support from family and friends; and mental health and substance use symptoms among low-income women. Measures of human capital in this study have been utilized to measure education and employment as strengths and to assess whether those strengths, either alone or in combination with perceived social support, mitigate depression and anxiety symptoms reported by low-income women.

Low-income women in this sample reported generally low rates of human capital activities (i.e., education and employment). The women reported an average of 11.19 years of school completed and 13.8% reported current enrollment in an educational activity. More specifically, 10% reported current enrollment in either a high school or GED program, 1.8% reported current enrollment in a vocational/technical educational program, and 5.9% reported current enrollment in a college degree program, with 4.4% reporting enrollment in an associate's degree program. It is interesting to note that the greatest percentage of women enrolled in a college degree program were enrolled in an associate's degree program. It is also interesting to note that the majority of women, 86.2%, reported no current educational program enrollment. In addition, the women reported a range of zero to 65 hours of current work per week with a mean of only 6.85 hours per week (SD=13.826) and a range of zero to 60 hours per week of current volunteer work without pay with a mean of just 1.75 hours per week (SD=6.324). Women who had last been employed during the past year reported a mean of 4.09 months since they were last employed while women who had been unemployed for over a year reported an average of 3.46 years since they were last employed. Additionally, nearly half of the women (47.4%) reported that the longest amount of time they had spent at one job was less than two years. And, while all of the women in the sample have low incomes, nearly one-third of them reported that they were receiving KTAP (29.1%) and 10% reported that they were receiving SSI benefits to support their families. These initial findings indicate that the low-income women in this sample are mostly uninvolved in the attainment of human capital through education and employment and that about one third utilize some type of government benefit to support themselves and their families.

Social support is uniquely important in the lives of women. The low-income women in this sample report a fairly high rate of perceived social support from family and friends. On average, the women report little difficulty getting along with family and friends. Nearly 40% report having no difficulties getting along with family or friends and only about 5% report having extreme difficulty getting along with family or friends. The finding that the low-income women in this sample do report the perception of social support from family and friends underscores the importance of high quality social support in the lives of women.

Low-income women in the study reported an average of 4.48 symptoms of depression (range=0-9) and an average of 3.39 symptoms of anxiety (range=0-6). Considering that depression and anxiety symptoms have been found to be widespread among low-income women, these findings are consistent with the literature (Belle, 1982; Ensminger, 1995; Lorant, Deliège, Eaton, Robert, Philppot, & Ansseau, 2003; Mathiesen, Tambs, & Dalgard, 1999; Mitchell & Ronzio, 2011).

Interestingly, the women in this sample report very low average rates of substance abuse symptoms and substance dependence symptoms. The mean substance abuse symptom rate reported is 0.12 (range=0-4) and the mean substance dependence rate reported is .67 (range=0-7). In that the literature shows a positive correlation between women with low-incomes and substance use (Brown & Riley, 2005; Staton-Tindall, Royse, & Leukefeld, 2007; Strauss & Falkin, 2001), this finding is surprising. However, given that the women who participated in this study were often involved with child protection services which may remove children from the home if substance use is reported; it is not surprising that the women may have answered questions less than truthfully with child protection issues in mind.

Bivariate correlation results among the human capital (independent) variables were also interesting. The number of years of school a woman had completed was significantly and positively correlated with each of the other human capital variables. Specifically, the more education a woman reported the more likely she was to also report being currently enrolled in school, current employment, less time since last being employed, current volunteer work not for pay, and having worked longer at one job. These findings are consistent with the human capital literature which states that more human capital is related to more positive life outcomes (Becker, 1995; Mincer, 1989).

All of these initial findings indicate that there are some relationships among study variables that are significant, and which can be further explained with the multivariate analysis results of hypothesis testing.

Hypothesis 1

H_1: Adjusting for control variables, greater overall human capital is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women. Hypothesis 1 was put forth because human capital theory takes into account that individuals employ the knowledge and experiences they have accrued in unique ways. For example, individuals with less human capital may feel marginalized and may, as a result, be more likely to become depressed or anxious and to use substances to cope with those negative feelings. On the other hand, individuals with more human capital may have a greater sense of self-worth and may, therefore, be less likely to experience depression or anxiety, and to self-medicate. Previous studies have shown that there are significant positive correlational relationships between greater human capital and more positive life outcomes such as less depression (Bhrolcháin, & Harris; 1975; Kahn, Wise, Kennedy, & Kawachi, 2000;

Makosky, 1982), less anxiety (Ensminger, 1995; Mitchell & Ronzio, 2011), and lower rates of substance use disorders (Savage & Russell, 2005). While human capital accumulation is important for everyone, it has been found to be especially important for individuals with low-incomes, particularly women (e.g.: Alfred & Martin, 2007; Danziger, Kalil, & Anderson, 2000; Dworsky & Courtney, 2007; Zedlewski, 2002).

Summary of results of hypothesis 1.

Each of the four OLS regression models testing the independent variable, overall human capital, was significant; however, only between 1.0% and 4.5% of the variance in the dependent variables was accounted for by independent variables in the models. It is important to note that even with the small R^2 values; the results do support the hypothesis in that overall human capital is predictive of depression symptoms and substance dependence symptoms. Specifically, more overall human capital is indicative of fewer depression symptoms and fewer substance dependence symptoms.

The only variable that was a significant individual contributor in each of the four models was KTAP receipt. Receipt of KTAP was predictive of more depression and anxiety symptoms and non-receipt of KTAP was predictive of more substance abuse and substance dependence symptoms. Being older was also indicative of more depression symptoms and more anxiety symptoms and non-receipt of SSI was indicative of more substance dependence symptoms.

Explanation of results of hypothesis 1.

Hypothesis 1 was partially supported by the significant contribution to the variance in depression symptoms and substance dependence symptoms made by overall human capital. As expected, greater overall human capital was predictive of fewer depression symptoms and fewer substance dependence symptoms. However, overall

human capital was not predictive of fewer anxiety symptoms or fewer substance abuse symptoms. One possible explanation for these findings is that the prevalence of depression and substance dependence symptoms reported by the women in this sample is higher than the percentage of anxiety and substance abuse symptoms they reported. These higher percentages may have caused the relationships between overall human capital and depression symptoms and overall human capital and substance dependence symptoms to be significant.

Another consideration is that all of the R^2 values for each of the sub-hypothesis models used to test hypothesis 1 were small. Even though overall human capital accounted for some of the variance in depression symptoms, it only accounted for 4.5% of the variance, which leaves 95.5% of the variance in depression symptoms unaccounted-for. In addition, overall human capital only accounted for 1.2% of the variance in substance dependence symptoms, which leaves 98.8% of the variance still to be accounted for. Thus, another explanation for the results is that the model may not be properly specified. The implication of this is that important variables may have been left out of the model (Licht, 2008). However, all relevant variables from the existing data were included in the analyses and the model was specified to the extent that it could be with the existing data.

Hypothesis 2

H_2: Greater educational achievement is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. One of the foundational ideas of human capital theory is that the more education that is accrued, the more likely an individual is to experience more positive life outcomes (Becker, 1964).

According to Pandey and Kim (2008), mothers who had at least a college education had a 39% higher income on average than mothers with no high school education. In addition, Zhan and Pandey (2004) found that single mothers who attended college, especially single mothers who had obtained bachelor's degrees, earned significantly more in the workforce, were nine times less likely to live in poverty, and were less likely to receive welfare than single mothers with a high school education or less. In general, greater educational achievement has been found to increase positive life outcomes.

Summary of results of hypothesis 2.

Hypothesis 2 was partially supported when the number of years of school was tested in a series of four OLS regression models. The number of years of school completed did account for a significant amount of the variance in depression symptoms and anxiety symptoms, but was not a significant individual contributor to the variance in either substance abuse symptoms or substance dependence symptoms. Completion of more years of school was indicative of fewer depression and anxiety symptoms. Specifically, the number of years of school completed accounted for 4.6% of the variance in depression symptoms and 3.8% of the variance in anxiety symptoms. As with hypothesis 1, KTAP receipt was a significant contributor in each of the four models. Receipt of KTAP was associated with more depression and anxiety symptoms and non-receipt of KTAP was associated with more substance abuse and substance dependence symptoms. Being older was also indicative of more depression, anxiety, and substance abuse and was also indicative of fewer substance dependence symptoms. Non-receipt of SSI was indicative of more anxiety symptoms as well.

Hypothesis 2 was partially supported when current educational program enrollment was tested in a series of four OLS regression models. Current educational

program enrollment accounted for some of the variance in substance abuse symptoms and substance dependence symptoms, but was not a significant individual predictor in the models in which depression and anxiety symptoms were examined. Current educational program enrollment was predictive of fewer substance abuse and substance dependence symptoms. In the model that examined current educational program enrollment and substance abuse symptoms, independent variables accounted for only 1.0% of the variance in substance abuse symptoms and in the model that examined substance dependence symptoms, the independent variables accounted for just 1.3% of the variance in substance dependence problems. Therefore, even though these models are significant, current educational program enrollment is not a strong indicator of these outcomes. Once again, KTAP receipt is a significant individual contributor to the variance in depression symptoms, anxiety symptoms, substance abuse symptoms, and substance dependence symptoms, and once again it is the receipt of KTAP that is indicative of more depression and anxiety symptoms and it is the non-receipt of KTAP that is indicative of more substance abuse and substance dependence symptoms. Being older is indicative of more depression and anxiety symptoms and of fewer substance abuse and substance dependence symptoms.

Explanation of results of hypothesis 2.

Hypothesis 2 was partially supported. It is interesting to note that the number of years of school completed was indicative of fewer symptoms of depression and anxiety, but was not indicative of substance abuse or dependence symptoms; and that current educational program enrollment was not predictive of depression and anxiety symptoms but was predictive of fewer substance abuse and substance dependence symptoms. It could be that women who are enrolled in educational programs find substance use to be

distracting when they are engaged in an educational program and that substance use could undermine their efforts. For these women, depression and anxiety may result from the educational activity itself, especially if they are unfamiliar with educational settings and rules. On the other hand, women with more years of education may have fewer depression and anxiety symptoms because they may cope with those symptoms through substance use. Additionally, women with more years of education may feel less depression and anxiety in that they are not feeling the pressure of current educational program enrollment and may have the time to engage in substance use. Another possibility is that substance use precludes any educational enrollment.

A possible explanation for the very small R^2 values in each of the 8 models that tested Hypothesis 2, which, for some of the models, leave 99% of the variance in the dependent variables unaccounted-for, is that the models may not be properly specified. All important and relevant variables were included in each of the models, but the data used for this study were not collected specifically to test the research questions posed here.

Another explanation for the low R^2 values is that despite the fact that the literature underscores the importance of human capital accumulation for low-income women; human capital is a measure of male-dominated endeavors. Overall, women and men are nearly equal in educational attainment. According to the United States Census Bureau (2012c), since 1990, slightly greater percentages of women have earned at least a high school diploma. In 2010, 86.6% of men earned at least a high school diploma as did 87.6% of women (U.S. Census Bureau, 2012c). However, men have always been just ahead of women when it comes to the completion of post-secondary education. In 2012, 30.3% of men completed college degrees or higher while 29.6% of women did the same

(U.S. Census Bureau, 2012c). However, despite the similar percentages of women and men who have attained educational program completion, many women are unable to translate those educational achievements into employment that provides living wages to support themselves and their families. The feminization of poverty is a reality in the U.S. With the prevalence of female-headed households on the increase, many women work in "pink-collar," low-paying jobs and earn wages that are not equivalent to men's wages (Tiamiyu & Mitchell, 2001). In fact, female-headed households have increased every year since 1980, and from 2000 to 2010, female-headed households increased by 17% (U.S. Census Bureau, 2012d). In female-headed households, women are generally the sole breadwinners and often struggle to meet the needs of their families due to low wages. Overall, women make 20% less than men (United States Census Bureau, 2012b). As of 2010, median weekly earnings for men were $824.00 and for women, $669.00, which is a difference of $155.00 (United States Census Bureau, 2012a). In general, women are much less able to transmit their educational attainment into higher-paying jobs which leads to the further feminization of poverty. Thus, despite being nearly equal in educational attainment, women and men have very different human capital outcomes. This is very likely due to human capital being a more androcentric concept that measures male-dominated accomplishments which is a possible explanation for the low variance accounted for by the dependent variables in the eight models that tested Hypothesis 2.

Hypothesis 3

H_3: A history of regular employment is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. The higher earnings that result from better jobs enables individuals to better provide for themselves

and their families. Employment that does not provide a livable wage may be more stressful for women with low incomes because low-paying jobs are not likely to raise low-income women out of poverty. One of the tenets of human capital theory is that the skills that an individual possesses lead to employment stability and higher earnings (Becker, 1964). Thus, this hypothesis is rooted in a basic tenet of human capital theory.

Summary of results of hypothesis 3.

Four sets of sub-hypotheses were tested to examine hypothesis 3. The first set of sub-hypotheses tested current employment as the independent variable and all four models were significant. However, each of the R^2 values were small at .055 (depression symptoms), .044 (anxiety symptoms), .011 (substance abuse symptoms), and .019 (substance dependence symptoms) which means that between 94.5% and 98.9% of the variance in the dependent variables are left unaccounted-for by the models. Still, current employment was indicative of fewer depression, anxiety, substance abuse, and substance dependence symptoms. Being older, receiving KTAP, and non-receipt of SSI were indicative of more depression and anxiety symptoms; non-receipt of KTAP was indicative of more substance abuse symptoms; and ever having been married, non-receipt of KTAP, and non-receipt of SSI were indicative of more substance dependence symptoms.

The second set of sub-hypotheses tested the number of months since last employment as the independent variable. All four models were significant, but the variance in the dependent variables accounted for by the number of months since last employment ranged from 1.1% to 4.4% which leaves up to 98.9% of the variance unaccounted-for by the independent variables. In only one model, which examined substance dependence symptoms as the dependent variable, was the number of months

since last employment a significant individual contributor. Thus, control variables accounted for the majority of the variance in the dependent variables. Being older and receiving KTAP were predictive of more depression and anxiety symptoms while being younger and non-receipt of KTAP were predictive of more substance abuse and substance dependence symptoms and ever having been married was predictive of more substance dependence symptoms.

The third set of sub-hypotheses tested the volunteer work without pay as the independent variable and all four models were significant. R^2 values were again small and ranged from .010 to .044 which leaves between .956 and .990 of the variance in the dependent variables unaccounted-for. Volunteer work without pay was a significant individual contributor only in the model that tested substance dependence symptoms as the dependent variable and was not significant in the other three models which tested depression, anxiety, and substance abuse symptoms as the independent variables. Being older and KTAP receipt were, again, indicative of more depression and anxiety symptoms. Non-receipt of KTAP was also indicative of more substance abuse and dependence symptoms while ever having been married was indicative of more substance dependence symptoms.

The fourth set of sub-hypotheses, which tested the length of time spent at one job as the independent variable, were all significant. R^2 values were, again, small and ranged from .009 to .044 which leaves between .956 and .991 of the variance in the dependent variables unaccounted-for. Only in the model testing substance abuse symptoms was the length of time spent at one job a significant individual predictor. Otherwise, control variables were significant contributors in the models. As with the other employment models, being older and receiving KTAP are indicative of more depression and anxiety

symptoms, while non-receipt of KTAP is indicative of more substance abuse and substance dependence symptoms, and ever having been married is indicative of more substance dependence symptoms.

Explanation of results of hypothesis 3.

Hypothesis 3 was partially supported. By and large, employment was found to play a minor role in mitigating depression, anxiety, substance abuse, and substance dependence symptoms among this sample of low-income women. Current employment was indicative of more outcomes than the other three employment factors. The greater the amount of time it has been since last employment and engaging in volunteer work without pay were indicative only of more substance dependence symptoms, and less time spent at one job was indicative only of more substance abuse symptoms.

A possible explanation for these findings is that women with current employment may feel happier about contributing positively to their own life outcomes and are likely, therefore, to experience fewer depression, anxiety, and substance abuse symptoms. Being employed is likely to give women hope which can lead to fewer negative mental health and substance abuse problems. Substance dependence symptoms, however, may be more difficult to alter simply because an individual is employed. For example, if women previously had no incomes and became reliant on substances as a coping mechanism; simply adding employment may not be enough to stop the symptoms of substance dependence. On the other hand, the longer the amount of time it had been since last employment and engaging in volunteer work without pay were both indicative of more substance dependence symptoms and less time spent at one job was indicative of more substance abuse symptoms. Self-medicating is a common among those who have

problems with employment and that self-medication, via substance use, may preclude feelings of depression and anxiety.

Again, the R^2 values in each of the employment models were quite small, which leaves a great deal of the variance in depression, anxiety, substance abuse, and substance dependence symptoms unaccounted-for. A possible reason for this is that the models may not be properly specified despite the inclusion of all of the appropriate and important variables in the data set. Again, these data were not collected specifically to answer this study's research questions.

Additionally, as described above, human capital is measured with factors, such as employment, that capture androcentric concepts which often leaves low-income women out of the conversation on human capital. Low-income women and in particular, women of color, are more likely to earn wages that relegate them to the working poor class (Burnham, 2007). For example, over half of Latinas, over 40% of Black women, and about one third of White women do not earn enough to lift themselves out of poverty. Additionally, low-income women who leave welfare usually work in "pink collar" jobs that are low-paying, entry-level jobs in the service industry and many times they are worse-off financially than they were when they were receiving welfare (Burnham, 2007). Thus, employment may not be a strong indicator of more positive life outcomes for low-income women when examined with only the kinds of measures available from the data utilized for this study. Other measures that could potentially be helpful in determining the role that employment plays in life outcomes among low-income women would include measures about a low-income woman's family of origin. None of those measures were available in the data set utilized for this study. The literature indicates that factors related to a low-income woman's family of origin are instrumental in whether or not her life

outcomes are positive (Becker, 1995; Benos, 2010; Kozimor-King, 2008; Lee, 2009; Zhan & Pandey, 2004; Zedlewski, 2002). For example, children who grow up in families with higher incomes are more likely to have positive educational outcomes such as earning high school diplomas, and are more likely to make more money than children who grow up in families with low incomes (Zedlewski, 2002).

Hypothesis 4

H_4: Perceived social support is associated with fewer depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems among low-income women when adjusted for control variables. For women, social support is uniquely important and has many positive implications (Acitelli & Antonucci, 1994; Ennis, Hobfoll, & Schröder, 2000; Gove, Hughes, & Style, 1983; Jackson, 1999; Simmons, Braun, Wright, & Miller, 2007). Perceived social support from intimate, high quality relationships are indicative of a woman's likelihood of having more positive life experiences (Antonucci & Akiyama, 1987; Letvak, 2002; Lynch, et al., 1999) including less depression and anxiety (Mitchell & Ronzio, 2011; Thoits, 1986; 2011) and less substance use (Brown & Riley, 2005; Staton-Tindall, Royse, & Leukefeld, 2007).

Summary of results of hypothesis 4.

Four sub-hypotheses were utilized to test hypothesis 4. All 4 models examining perceived social support from family and friends as the moderator were significant. Perceived social support from family and friends made significant individual contributions in each of the four models. Greater perceived social support from family and friends was predictive of fewer symptoms of depression, anxiety, substance abuse, and substance dependence. In fact, perceived social support from family and friends explained 19.7% of the variance in depression symptoms and 13.8% of the variance in

anxiety symptoms, but explained much less of the variance in substance abuse symptoms (1.0%) and substance dependence symptoms (3.2%). As has been the case with each of the other hypotheses, KTAP receipt was significant in each model: receipt of KTAP is indicative of more depression and anxiety symptoms and non-receipt of KTAP is indicative of more substance abuse and dependence symptoms. Being older is also indicative of more depression and anxiety symptoms. Further, non-receipt of SSI is indicative of more depression and anxiety symptoms, never having been married was indicative of more anxiety symptoms, and ever having been married was indicative of more substance dependence symptoms.

Explanation of results of hypothesis 4.

Hypothesis 4 was fully supported. Perceived social support from family and friends was found to be predictive of fewer symptoms of depression, anxiety, substance abuse, and substance dependence and accounted for much more of the variance in depression and anxiety symptoms than any other independent variable tested in this study.

The finding that perceived social support from family and friends is predictive of fewer mental health and substance use problems among low-income women is in keeping with the literature. This finding underscores the importance of high-quality perceived social support in the lives of low-income women. As indicated in the literature, perceived social support plays an integral role in the lives of women. When women perceive that they have high-quality supports in place, they are much less likely to experience mental health problems such as depression and anxiety (Acitelli & Antonucci, 1994; Antonucci & Akiyama, 1987; Ennis, Hobfoll, & Schröder, 2000; Gove, Hughes, & Style, 1983;

Jackson, 1999; Letvak, 2002; Lynch, et al., 1999; Simmons, Braun, Wright, & Miller, 2007).

Alongside the finding that human capital factors play a minor role in reducing mental health and substance use problems among low-income women in this study, understanding that perceived social support from family and friends does play an important role in the lives of low-income women helps to further delineate the differences between the more masculine construct of human capital and the more feminine construct of perceived social support. Finding measures that capture more feminine constructs related to human capital such as information on family of origin; values, beliefs, and goals, and measures that capture details about relationships women have in their lives could potentially garner more specific, female-related, family-centered information and bring women further into the conversation about human capital. Definitions of human capital must be expanded to capture more feminine- and family-centered constructs that deal with more relationship-based details that are common among women. For example, women who attend educational programs may expand human capital through the relationships they build there as well as through attaining a degree; and women who find employment may utilize the networks they develop through employment to accrue human capital in addition to earning money to support their families.

Additionally, R^2 values remain small. An explanation for this is that the models may not have been properly specified, even those models in which 13.8% and 19.7% of the variance in the dependent variables was accounted-for. Again, all relevant and important variables in the existing dataset were included in each model, but conceptual and operational variable definitions may not fit together as well as had been hoped.

Hypothesis 5

H_5: When adjusted for control variables, perceived social support will moderate the relationship between human capital (including overall human capital and each individual human capital factor, (i.e. education and employment)) and depression symptoms, anxiety symptoms, substance abuse problems, and substance dependence problems. Specifically, women with more perceived social support have more human capital which leads to even fewer mental health problems and substance use problems than women with low perceived social support when adjusted for control variables. - Given the importance of both human capital accumulation and perceived social support for low-income women, it was important to examine the moderation effects of perceived social support with each human capital variable in the study. However, results from all previous study hypothesis tests have shed light on the relatively minor importance of the more masculine human capital constructs accounted for by variables in this study and the greater importance of the more feminine constructs of perceived social support in this study. Taking those earlier results into consideration, it is not surprising that no true moderation effects are present.

Summary of results of hypothesis 5.

Under hypothesis 5, 7 sets of sub-hypotheses were tested utilizing a total of 28 OLS regression models. In order to fully test hypothesis 5, interaction terms were created for each independent variable, (i.e., overall human capital, years of school completed, current educational program enrollment, current employment, number of months since last employment, current volunteer work without pay, and length of time spent at one job) with perceived social support from family and friends. Each of the 28 models was significant, and the highest R^2 value found was .198. The range of variances accounted

for by independent variables in the models was 1.0% to 19.8%. More of the variance in depression symptoms and anxiety symptoms was accounted for by the interaction terms and other independent variables tested under hypothesis 5. On the other hand, very little of the variance in substance abuse symptoms and substance dependence symptoms was accounted for by any of the independent variables and interaction terms that were tested under hypothesis 5. Three interaction terms were found to be significant individual predictors of depression symptoms, anxiety symptoms, substance abuse symptoms, and/or substance dependence symptoms according to model coefficients; however, upon further examination, no moderation effects were actually present. Those significant interactions are described briefly.

Perceived social support from family and friends as a moderator of education variables.

Perceived social support from family and friends was initially found to moderate 3 relationships between human capital education variables and outcome variables. First, according to model coefficients, the relationship between current educational program enrollment and substance dependence symptoms was moderated by perceived social support from family and friends. However, in order to determine the nature of the interaction, it was important to plot the coefficients. The resulting graph revealed no actual interaction between the regression lines. Thus, there is no true interaction between the variables. The early indication of this was the unchanged R^2 value in the model. Specifically, no additional variance in substance dependence symptoms was explained by the interaction term between current educational program enrollment and perceived social support from family and friends. The main effects of current educational program enrollment (β= -.047, p=.000) and perceived social support (β= -.149, p=.000) in step 2 of

the model did account for the increase in the R^2 value from step 1 (R^2=.010) to step 2 (R^2=.034), but there was no increase from step 2 to step 3 of the model. Additionally, the final R^2 value is very small (R^2=.034) with only 3.4% of the variance in substance dependence symptoms accounted for by the independent variables in the model. Thus, perceived social support does not truly moderate the relationship between current educational program enrollment and substance dependence symptoms.

Second, according to model coefficients, perceived social support from family and friends moderates the relationship between years of school completed and depression symptoms. A subsequent step to determining the nature of the interaction is to plot the coefficients, and the graph that resulted indicated that the regression lines did not intersect. Thus, there is no true interaction between the variables. More specifically, because the regression lines do not meet, the relationship between years of school completed and depression symptoms is not moderated by perceived social support from family and friends despite the coefficients indicating that it did. The unchanged R^2 value from step 2 to step 3 in the model was an early indication that the interaction term was not truly significant. The R^2 value increased significantly, from .044 in step 1 to .198 in step 2 of the model, but there was no additional increase in the R^2 value in step 3 of the model, in which the interaction term was tested. The main effects of both years of school completed (β= -.032, p=.000) and perceived social support from family and friends (β= -.394, p=.000) contributed significantly to the amount of variance in depression symptoms in step 2 of the model. In fact, 19.8% of the variance in depression symptoms is accounted for by the independent variables in step 2 of the model. The interaction between the independent variables does not account for any additional variance in the dependent variable. Thus, the unchanged R^2 value as well as the lack of intersection

between regression lines when the coefficients were plotted indicates that perceived social support from family and friends does not truly moderate the relationship between years of school completed and depression symptoms.

Third, according to model coefficients, perceived social support from family and friends moderates the relationship between years of school completed and anxiety symptoms. Further examination of the moderation relationship was conducted by plotting the coefficients. The resulting graph revealed that the regression lines do not intersect. Thus, the relationship between years of school completed and anxiety symptoms is not moderated by perceived social support from family and friends. The unchanged R^2 values from step 2 to step 3 in the model, the test of moderation, was an early indication that the interaction term was not significant. Additionally, main effects of both years of school completed (β= -.029, p=.001) and perceived social support (β= -.322, p=.000) did account for a significant increase in the R^2 value from step 1 (R^2=.036) to step 2 (R^2=.140) in the model. However, the interaction term did not account for any additional variance in anxiety symptoms in step 3 of the model. Thus, despite the significant coefficients in step 3 of the model, subsequent plotting of coefficients and the resultant lack of intersection between regression lines as well as the unchanged R^2 values indicate that perceived social support from family and friends does not moderate the relationship between years of school completed and anxiety symptoms.

Explanation of results of hypothesis 5.

Coefficients for three interaction terms indicated that they were significant individual predictors in models testing for moderation of perceived social support. However, subsequent examination of each of the interaction terms indicate that there is no true moderation present in any of the models tested.

Since perceived social support, especially from high-quality supports like family and friends has been shown to be especially important for women, it is surprising that none of the tests of moderation yielded more important findings. The small impact of the combination of more female-centered perceived social support variables as potential moderators of the less female-centered human capital variables may be a further indication that definitions of human capital must be expanded to accommodate activities in which women are more likely to participate to accrue human capital. Those could include a broader focus on the ways in which human capital is developed through relationships women have with others in education and employment settings. The focus could also be expanded to include how women have developed values and beliefs and how they pass those on to their children, especially because the human capital literature emphasizes the importance of generational human capital. The data utilized for the current study did not allow for generational human capital to be examined.

Another possible explanation that no true moderation effects are present may be an indication, again, that the model may not be properly specified. Variables from the data set that were utilized to test this study's research questions may not reflect the constructs utilized for hypothesis testing.

Study Contributions

The contributions made by this study are related to (1) human capital being examined as a predictive measure, (2) the importance of perceived social support in the lives of low-income women, and (3) the implications for social work practice with low-income women in the areas of human capital and perceived social support.

Human capital as a predictive measure.

This study contributes to the literature in that it considers human capital as a predictive measure. In much of the previous research, human capital has been examined as an outcome measure; something that an individual acquires as the *result* of education, income, and employment. One of the main reasons this study examined human capital as a predictive measure among low-income women is that social workers are often tasked with assisting low-income women with achieving more positive life outcomes and human capital acquisition is often a means to that end.

Rather than human capital existing on the far end of a continuum of activities, many social workers treat human capital acquisition as the first step along that continuum. This study sought to support hypotheses that examined human capital as a predictive measure for those reasons. However, those hypotheses were not fully supported and even with significant models, the actual value of that significance is minor at best in each of the human capital hypothesis models despite the suggestion in the literature that human capital increases earning potential and lays the groundwork for better personal and familial outcomes for people living in poverty (Gao, Gill, Schmidt, & Pratt, 2010) and even that human capital can diminish poverty in the U.S. (Becker, 1995). This study was grounded in these ideas and lays the groundwork for future studies to further examine the utility of human capital as a predictive measure among low-income women utilizing more female-centered measures.

The importance of perceived social support among low-income women.

This study contributes to the literature because findings underscore the importance of high-quality perceived social support for low-income women. While perceived social support from family and friends was not a moderator of human capital

and mental health and substance use problems in this study, it was the strongest individual predictor of more positive outcomes among low-income women. More than human capital in this study, perceived social support positively impacts the lives of low-income women.

This study supports findings in the literature that indicate that the perception of available, high-quality social support is more important than the actual availability of social support (Cohen, 2004; Letvak, 2002) and that social support is uniquely important for women (Acitelli & Antonucci, 1994; Ennis, Hobfoll, & Schröder, 2000; Gove, Hughes, & Style, 1983; Jackson, 1999; Simmons, Braun, Wright, & Miller, 2007). Specifically, this study found that, among low-income women, the perception of more high quality supports, (i.e., from family members and friends) is predictive of fewer depression and anxiety symptoms. These findings are important especially since depression symptoms are common among low-income women (Belle, 1990; Brown, Bhrolcháin, & Harris, 1975; Coiro, 2001; Dohrenwend et al., 1992; Kahn, Wise, Kennedy, & Kawachi, 2000; Lincoln, Chatters, &Taylor, 2005) and because up to 60% of low-income women report symptoms consistent with a diagnosis of depression (Coiro, 2001). In addition, low-income women have been shown to experience anxiety symptoms at high rates (Bowers & Gesten, 1986; Ensminger, 1995), but few studies examine anxiety as a singular concept. Many studies that have examined anxiety among women have done so with a construct called *psychological distress* which captures depression and anxiety together as a single concept (Ensminger, 1995; Wethington, & Kessler, 1986). This singular concept does not differentiate between the two sets of symptoms and can be problematic for interpretation. Because this study makes the distinction between depression symptoms and anxiety symptoms, interpretation of the influence of perceived

social support on both depression and anxiety symptoms is clear. Distinguishing between concepts, namely examining anxiety as a singular concept and not as part of a combination of concepts is another way this study contributes to the literature.

Implications for social work practice and research.

There are implications for social work practice with low-income women in the areas of human capital and perceived social support as a result of this study's findings. First, some of the core values of the social work profession are addressed in this study. They include social justice for all people as well as the dignity of individuals, and the importance of human relationships (National Association of Social Workers, 2008).

Examination of human capital as a predictive measure satisfies social work's core value of the achievement of social justice for all people, and for marginalized people in particular. Low-income women have long been unable to achieve the same kinds of outcomes as other members of society because they have been denied the same kinds of opportunities to do so. This investigation of the protective nature of human capital and perceived social support also upholds the core values of the social work profession. When individuals are encouraged to increase their innate knowledge and skills through the acquisition of human capital, they are afforded personal dignity. When low-income women perceive that they have high-quality social supports available to them, the importance of relationships between people is upheld.

By examining human capital and social support and their potential to protect low-income women from mental health problems and substance use problems, the research goals of the social work profession are upheld as well. The profession seeks to promote social justice and enhance the lives of individuals through relevant, meaningful, empirical research (NASW, 2008). This study fills a gap in the literature by examining human

capital as a predictive measure and by conceptually defining human capital as a continuum of strengths that are utilized to attain the best life outcomes possible.

An aspect of this study that has implications for social work research is that the human capital measures utilized in this study capture more masculine concepts that may not be as useful for examining human capital among women. Finding measures that capture more feminine constructs related to human capital such as information on family of origin; values, beliefs, and goals, and measures that capture details about relationships women have in their lives could potentially garner more specific, female-related, family-centered information and bring women further into the conversation about human capital. Along with refining measures of human capital for use with women, definitions of human capital must be expanded to capture more feminine- and family-centered constructs that deal with more relationship-based concepts that are common among women.

An implication for social work practice based on findings from this study is based on the impact of high-quality perceived social support on mental health symptoms among low-income women. Perceived social support can be combined with human capital, which previous research has found to be extremely important as an outcome for low-income women, and utilized to implement programs to assist low-income women and their children. Since social support is a key factor in reducing the problems low-income women experience with mental health, as part of an intervention, teaching low-income women how to foster and maintain supportive relationships with others could be a first step. Supportive connections could be established with other low-income women, social workers assisting the women, and most importantly, with other friends and family members. Once women have learned how positive and negative supports are manifested and how to maintain the positive supportive relationships in their lives, women can be

introduced to options for increasing their human capital, should they so choose. Those options can range from ABE classes and GED classes to job skills training and post-secondary education. With additional opportunities available for human capital accrual, low-income women will have the added benefit of setting an example for their children. Since human capital capabilities are passed from generation to generation (Becker, 1964, 1995; Benos, 2010; Kozimor-King, 2008), it is important for low-income women to have opportunities to show their children that they can accrue more human capital themselves after they have established important social supports. In combination with perceived social support, human capital accumulation, though out of the realm of experience of many low-income women, may prove to be less daunting than it may otherwise have been in the absence of the perception of social support or with negative social support. These skill-building interventions seek to assist low-income women through the unique lens of the social work profession. Building social supports, increasing human capital, and assisting women with identifying opportunities they may not have otherwise known existed are all ways of helping low-income women attain social justice. Further, the results of this study indicate that low-income women who have more overall human capital as well as more years of school completed, current employment, and more perceived social support from family and friends are less likely to experience some mental health and substance use problems. Additionally, perceived social support from family and friends was found to mitigate depression symptoms in combination with overall human capital and in combination with current educational program enrollment. Perceived social support from family and friends was also a mitigating factor for anxiety and substance dependence symptoms when combined with current educational program

enrollment. Thus, involving women in the enhancement of both social supports and human capital may be beneficial in multiple ways, for women and for their children.

Study Limitations

The limitations of this study are related to cross-sectional data, secondary data analysis, self-reported data, and lack of data on a woman's family of origin or current family.

Cross-sectional data.

This study has limitations. First, the data are cross-sectional, so cause and effect cannot be determined. Further, one-time data collection limits this study because women may have answered the study questions based on how they were feeling at the time or based on other events that may have been happening historically. A longitudinal design may have been able to help capture factors such as nuances related to human capital accrual over a period of time, the possible development of perceived social support with more participation in human capital activities, shifts in mental health symptoms and substance use symptoms over time, and possible connections among these factors over time.

Secondary data analysis.

Another limitation of this study is that the data were not collected to answer the research questions that were posed for this study. This study was based on an analysis of secondary data collected by the University of Kentucky's Targeted Assessment Program. Thus, the measures were not designed specifically to capture the constructs that this study examined. Had there been more female-based measures regarding factors such as family of origin, values, beliefs, and relationships, this study's research questions may have been more fully addressed.

Self-reported data.

In addition, all answers provided by the study participants were self-reported. The women may not necessarily have provided the most honest answers to the study questions. Many participants are referred by child protection workers and may, therefore, answer questions in a way that portrays them in the best possible light in order to not compromise their child custody status. In addition, the women were asked to reflect on the past three months to answer questions and some of them may not have good recall which may have compromised their answers.

Purposive study.

This study was conducted with low-income women who were selected for participation because of their enrollment in the Targeted Assessment Program (TAP). Each of the women was referred to TAP by Child Protection Workers or Family Support Workers when a determination was made that the women were experiencing multiple severe problems. Because of these specific characteristics, it is difficult to generalize the results of this study.

Lack of data on family of origin and current family members.

An important limitation of this study is that there are no measures in the data set on factors related to a woman's family of origin or current family members' education, employment, income, mental health problems, or substance use problems. The literature describes the importance of passing on human capital to future generations, but this study was unable to examine the role of familial human capital or how it may be related to familial problems with mental health and substance use. In order to more fully examine human capital among low-income women it would be important to include more female- and family-centered measures such as measures that capture education, employment,

income, mental health problems, substance abuse problems, values, beliefs, and relationships, among others, of a woman's family of origin as well as of her current family. The addition of these measures could potentially help find a more comprehensive set of variables to more thoroughly examine human capital among low-income women.

Future Directions

Despite the limitations of this study, there are important implications for future directions in social work research. First, this study found that, among low-income women, the perception of more high quality supports, (i.e., from family members and friends) is predictive of fewer depression and anxiety symptoms. Second, this study found that human capital measures of education and employment may not accurately capture human capital among low-income women. Third, this study found that KTAP receipt was consistently a significant indicator of fewer mental health symptoms and of more substance use symptoms.

This study upheld previous research in that among low-income women, high-quality perceived social support from family members and friends is predictive of fewer depression and anxiety symptoms. It will be important for future research to examine whether specific types of perceived social support may be protective for low-income women. The current study demonstrates that perceived social support from family members and friends is protective in nature in relation to depression symptoms and anxiety symptoms. Thus further examination of high quality social supports is important. Research that includes comparisons of low-income and higher-income women's high quality social support could have important results.

Another direction for future social work research is in the area of expanding definitions of human capital to include more female-focused measures. This study found

that human capital was not notably important for low-income women. These findings were contrary to study hypotheses which were grounded in human capital theory. Since human capital acquisition has been shown to be so important for low-income women, it is essential that definitions are expanded so that low-income women can be brought into discussions about positive outcomes related to human capital.

One way to begin to expand human capital definitions to include women is for future research to test measures related to a woman's family of origin, her current family, measures that capture relationships, and how those relationships may help propel a woman forward in terms of employment, education, and income. Past research has determined that one of the greatest influences on the human capital that an individual has is the human capital of her family of origin. Thus, there are important reasons to help low-income women develop human capital and to effectively measure that human capital so that her children and future generations will have more positive life outcomes. Therefore, redefining human capital more broadly and with more female-based measures are important goals for future social work research.

This study also found that KTAP receipt was a significant predictor in every hypothesis that was tested. Receipt of KTAP was predictive of more depression and anxiety symptoms and non-receipt of KTAP was predictive of more substance abuse and substance dependence symptoms. These findings, though of minimal statistical significance, were consistent in each of the models that were examined for this study. Even when no other measures in the models were significant, KTAP receipt was always significant. These findings have important implications for future social work research.

The significance of KTAP receipt among low-income women is interesting. Since all women in this study were poor, with incomes that were 200% of the poverty line or

less, KTAP receipt was utilized as a control variable. Future studies should include KTAP (welfare) receipt as a study variable that may be an important indicator of human capital for low-income women. This study viewed human capital as a continuum with more education, higher income, and a history of work at one end of the continuum and less education, lower income, and a limited work history at the other end of the continuum. Additional research in which KTAP receipt is viewed positively, on the higher end of the human capital continuum, and as a way that low-income women can maintain relatively higher incomes may be instructive. In fact, research that frames human capital as a continuum could have positive implications for low-income women and could pave the way for more female-centered conversations on human capital.

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FIRST-AUTHOR PUBLICATIONS

Leukefeld, S. (2011, March/April). Incivility and self-doubt in the social work classroom: A survivor's tale. *Social Work Today*. Web Exclusive. Retrieved from: http://www.socialworktoday.com/archive/exc_041911.shtml

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Leukefeld, C.G, and Leukefeld, S. (1999). Primary socialization theory and a bio/psycho/social/spiritual practice model for substance use. *Substance Use & Misuse, 34* (7), 983-991.

PRESENTATIONS

Leukefeld, S., & Staton-Tindall, M. Human capital and social support: Correlates of mental health among women substance abusers. Presented, 6th Annual Spring Conference of the University of Kentucky's Center for Clinical and Translational Science. March 2011.